THE PAPAGO INDIANS OF ARIZONA

A POPULATION & ECONOMIC STUDY

By

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[Title Page]

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1963

THE PAPAGO INDIANS OF ARIZONA

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A Population and Economic Study

By

William H. Kelly

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FOREWORD

The studies upon which this report is based had their inception in a series of Papago Tribal resolutions and proposals dating back to the summer of 1958, and in the continuing effort on the part of the Bureau of Indian Affairs and members of Congress from Arizona to find a solution to the very pressing economic situation of Papago Indians.

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In the summer of 1958 the Papago Tribal Council and the Association for Papago Affairs, an organization of Indians and other citizens of Southern Arizona, requested Arizona's Congressional delegation to join together in a bipartisan effort to secure federal appropriations for a complete and detailed study of Papago reservation resources, economic conditions, and the Papago manpower potential. The intention was to secure the facts upon which a Papago development plan could be based in order to assure: "That the Papago Indians and their reservation will assume a place of security, dignity, and economic importance in the broader community which includes the reservation, and that the Papago people may continue to be masters of their individual and tribal destiny in the Arizona of tomorrow."

Resolutions authorizing the above studies were introduced in the Senate by Barry Goldwater and in the House by Congressman Stewart Udall, but Congress failed to take action. During the spring of 1960, at the continued urging of the Papago Tribal Council, the Association for Papago Affairs and many individuals, notably William S. King, Chester Higman and Douglas Holsclaw, Senator Barry Goldwater with the help of Roger Ernst, at that time Assistant Secretary of the Interior, secured an allocation of Bureau of Indian Affairs funds for the purpose of conducting a Papago study. Arrangements were then made, in March of 1960, for a contract between the Bureau of Indian Affairs and the University of Arizona in which the Bureau of Ethnic Research was assigned two parts of the larger study proposed in 1958: (1) A manpower survey which would consist of employment data

121 and supplementary information on adult Papago Indians, the data to be presented
122 in the form of a detailed listing of information on individuals, accompanied by
657 an interpretive summary report. (2) A survey of the current use by Indians of
[127] Papago agricultural and stock raising resources. This material, plus much other
information on the Papago and the Papago reservations which had been gathered
through the years by the University of Arizona, is contained in the following
report.

The most important additional information consists of the demographic and sociological data contained in the Bureau of Ethnic Research Papago Population Register which was assembled under the sponsorship of the National Cancer Institute. It was understood that the manpower information in Chapter IV of this report would be drawn principally from our Papago Population Register which, incidentally, was not completed until the first week in October of this year.

121 Members of the staff of the Bureau of Ethnic Research, in connection
657 with the above contract, have also agreed to serve as consultants in the preparation of a Papago Development Program which will be based, in part, upon the material in this report. The need for such a Program was stated fully in the 1958 Association for Papago Affairs resolution:

> "Whereas, the Papago Indian Tribe, the second largest tribe of Indians in Arizona, has repeatedly asked for an assistance program from the federal government in the form of the Papago Development Program which was written almost ten years ago; and
>
> "Whereas, the Papago Development Program, no longer considered to be applicable by the Bureau of Indian Affairs, was written without sound knowledge of certain basic facts about the Papago people and their reservation such as: The size of the Papago Tribe; the residence patterns of its members; detailed and quantified information concerning family income; the extent and composition of the Papago labor force; trends in Papago economic adjustment; conditions of Papago health, education, and welfare; the economic potential of the reservation, especially mineral deposits, etc.; and

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"Whereas, the Papago Development Program was conceived and written with only a minor consideration of the relationships between the Papago people and their reservation to the rest of Southern Arizona; and

"Whereas, Southern Arizona is one of the fastest growing regions in the nation; and this growth, both economic and in terms of population increase, cannot help but influence the direction in which Papago life will move in the future."

Reliable information is, of course, required in the preparation of any long range areal program. The need for such a program for the Papagos requires no special study. The most casual acquaintance with the reservations discloses the general nature of the depressed economic conditions which have merely been documented and measured in this report.

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A great many individuals have assisted in gathering the material upon which this report is based. Primary recognition must be given to Dr. Robert A. Hackenberg who, as assistant director of the Bureau of Ethnic Research, was in charge of the project which [illegible]duced our Papago Population Register. His chief assistants were Frank DeMeritt, Charles Cook, William S. King, Ella Rumley and Beverly Solheim. Richard B. Woodbury and Nathalie F.S. Woodbury collected most of the material on reservation farming and stock raising. Harland Padfield both conceived and executed the study which has provided the data for our analysis of Papago employment on Pima County farms. Richard Jones made the study of Papago welfare and, using some material previously collected by Delmos Jones, gathered and wrote the material for the section on Papago reservation settlements. Charles Hoffman and Peter Hemingway secured the data on Papago reservation wage workers as well as some other information, including additional data on reservation agriculture. Peter Hemingway also performed the remarkable feat of sorting the many thousands of I.B.M. cards to produce the data for our employment tables within three weeks of the time he first saw an I.B.M. machine. Maps were prepared by Frances Bessmeyer and Richard Woodbury. Last minute editing, correcting, tabulating and trouble shooting was the very competent hands of Patricia Anderson. The

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000 loyalty, generosity and competence of all these people have made my work comparatively easy. I thank each one, and promise each one a future world where they can work longer hours for little or no pay since these are the two things they all seem to want.

122 Mr. Thomas H. St. Clair, superintendent of the Papago Agency, his predecessor Mr. Harry Gilmore and the heads of the various agency departments have [114] been consistently and generously helpful in our work. Much of the data, as a matter of fact, was gathered and tabulated by members of the agency staff.

[123] Mr. Eugene Johnson, Chairman of the Papago Tribal Council, and his predecessors Mr. Mark Manuel and Mr. Enos Francisco, have not only given direct assistance but have explained and endorsed our work on the reservation so that interviews with Papago families were carried out smoothly and pleasantly. Our thanks also go to Mr. Edward J. Sullivan, administrative assistant to the tribal chairman, who provided us with needed information and help from the tribal office.

W.H.K.

Chapter I

HISTORY

The modern Papago, and their effort to adjust 121
to the American industrial civilization around them, [178]
cannot be understood apart from the traditions and values [131]
that have come down through the years from the ancestral Papago society which occupied this same region in pre-Spanish times. The contrast between the Papago society and economy of 1700 and modern American industrial life is as great as the contrast between any two societies in the world today.

Linguistically, the Papago dialects--still 197
spoken in the vast majority of Papago homes--are classified with the Pima-Papago division of the Piman language which, in turn, is grouped with the larger Uto-Aztecan stock which is made up of Indian languages spoken from southern Mexico to the borders of Montana and Wyoming.
Culturally, the Papago are related to the desert tribes 101
of northwestern Mexico, western Arizona, southern California and Nevada.

As a group these so-called "Rancheria" cultures 105
are characterized as having loose political organization 171
with little authority vested in the chief or headman; 175

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105 lack of interest in wealth, religious structures, and
171 public works; relative unimportance of religious ceremonialism
175 and the weak development of religious leadership. On the positive side, they had a highly developed
[181] native literature in myth and song recital, in folk stories, and in formalized oratory; they were greatly interested in social gatherings and were especially sensitive to the maintenance of form and custom in social intercourse. The reports on all these people give the impression of an unhurried, relaxed type of life, and a dependence upon established tradition and the old people who understood this tradition, rather than upon individual initiative.

171 The absence of individual aggressiveness, the
181 ease of manner, and the lack of a fully developed interest
178 in economic advancement, as this is known in white society, persist as cultural traits among the modern groups and account, in some measure, for their resistance to measures and proposals stemming from the white man's concept of "progress," and his interest in wealth as a symbol of status and achievement.

175 The Papago, however, with their interest in
171 agriculture and in village life, had a somewhat more complex
105 way of life than the typical "Rancheria" groups of northwestern Arizona, southeastern California, and Nevada,
[621] in pre-Spanish days. The Papago village, in fact, was usually politically autonomous and served as the next most

important social unit to the extended family which, in some 175
other Rancheria cultures, was the largest effective social 171
unit. Leadership, as among other desert tribes, was more 105
through personal influence and character than vested author- 621
ity. In addition to the headman each village also had a council of elders, a village crier, a keeper of the smoke, and other village officers who were in charge of ceremonies
and festivals. Papago warfare, led by men selected for [648]
their ability, was directed principally against the Apache on the east.

Perhaps the people now known as Papagos would be 175
more accurately described as the descendents of three west 101
to east groups whose "Rancheria" type culture became more 131
complex toward the east where increased rainfall and sur- 132
face water permitted such things as concentrated and permanent settlements, greater division of labor, and more elaborate religious ceremonies. Dr. Bernard Fontana, at any rate, has pointed out that at the time of Spanish contact there were three major "types" of Papago groups classified on the basis of subsistence and settlement patterns. (Personal Communication). These, according to Fontana, were the western centrally-based nomads, the Sand Papagos, living in an area of less than five inches of rainfall annually and located between the Gila Mountains on the west to the Ajo Mountains on the east; the central "akohin" farmers, or Papagos proper, whose winter-summer transhumance

175 pattern is well known, living in an area of between five
101 and ten inches of rainfall annually and located between
131 the Ajo Mountains on the west and the Baboquivari Mountains
132 on the east; and the eastern riverine sedentary Papagos, or "Sobaipuris", living in an area of between ten and fifteen inches of rainfall annually and located between the Baboquivari Mountains on the west and the San Pedro Valley on the east.

175 Papago agricultural techniques were simple.
105 Most fields were small, located at the foot of steep
241 slopes, where intermittent streams emerged at the edge of the flat desert land; at these "mouths" (akchin in Papago), a small cultivated area could be watered, if rain came in the adjacent hills at the right time. Small irrigation channels were used to bring water from larger mountain streams to fields in the flat valleys, but no large-scale development of irrigation was possible such as the Gila
[162] and Salt valleys permitted. Along the Santa Cruz River, however, in the vicinity of the San Xavier Mission south of Tucson, extensive irrigation canals were used in pre-Spanish times and, even though smaller in extent than the aboriginal irrigation systems along the Gila and Salt, permitted a concentration of population at Bac which exceeded the size of any of the Pima villages farther north. (Dr. Bernard Fontana, Personal Communication).

The principal aboriginal crops were corn, beans, 175
and squash, to which the Spanish missionaries added wheat, 105
kidney beans, lentils, vetch, chick peas, and possibly 241
watermelons. These new crops, however, were not grown [177]
in significant quantities until the last few generations.
Wheat could be planted in February and harvested in May, [221]
and corn was regularly planted in July or August when the
summer rains came; thus two grain crops a year became possible,
greatly increasing the agricultural potential of the
area, although it was still limited by the extreme variation
and scarcity of rainfall.

The typical family was made up of the parents, 175
their children, and the wives and children of the sons. 105
Such units were grouped into villages with a tendency for 596
village members to be related through the paternal line. [621]
Like other southern and western Arizona groups, the family
was the important economic unit, with each family responsible
for its own subsistence.

Religious practices were centered around the 175
recurring events of the annual economic cycle interspersed 105
by many curing and other personal crisis ceremonies. The 796
regular annual round of ceremonies included as its most [771]
important events a rain ceremony in early summer, after the [221]
gathering of the fruit of the giant cactus, at which the [361]
fermented juice of the fruit was drunk, and a deer dance in
the autumn or early winter when the people had moved into
their mountain localities from the summer field villages.

175 105 796 their mountain localities from the summer field villages.

The most important and elaborate of all religious ceremonies, however, was the viikita which was celebrated every four years. This has been called a harvest ceremony but it was more than that and might better be called a "world renewal ceremony", something designed to set everything in order and to promote general future growth and welfare (Dr. Bernard Fontana, Personal Communication).

175 105 The picture is one of a society of small autonomous villages, loosely held together by custom and tradition, and governed by the unanimous decisions of the older men. For the individual there was a high degree of freedom coupled with full responsibility for the protection, livelihood, and well being of the members of his own family.

181 177 The difference between this type of society and our own is difficult to visualize. The typical Papago feels most intensively both the loss of individual action in our highly institutionalized society, and the loss of almost complete self-dependence. The welfare agency, for example, will feed his children if they are hungry, but he must abide by their rules; the Indian Service school educates his children, but he has no real control over what they are taught, or how they are taught. It is the difference between a society with small resources, and small opportunities, but with maximum individual freedom and responsibility, and a society with great resources and opportunities made possible by the transfer of individual action to group action and controls

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and controls. 175

European Contact. The first important contact 177
between Papagos and Europeans came about when Father Eusebio 797
Kino brought his missionary program into what is now Sonora 231
and Arizona in the late 1600's and early 1700's. Of
greatest significance to the Papago was the Spanish intro-
duction of cattle, sheep, goats, and horses. On several
journeys into what is now southern Arizona Kino had stock
from the missions of Sonora driven north, and cattle and
horses quickly became established in many areas. Unfortun- 175
ately for the Papago, the Apache in the mountainous areas 231
to the north and east found Papago stock a strong lure for 648
increased raiding activities; as the Apache now also had
horses, they could travel far and fast, and both Pima and
Papago were forced to defend themselves by means of more
carefully organized military activities than had previously
been common. The advantages of a greatly increased meat
supply from cattle and the increased mobility made possible
with horses, were at least partly offset by the continued
Apache raids, which neither Papago nor Spanish measures were
fully successful against.

In spite of Kino's vigorous beginnings, mission- 175
ary activities were on a small scale and most Papagos re- 177
mained largely isolated from Spanish contact, except in- [797]
directly through the new plants and animals that had been
introduced. During the many years of revolution by which

175 Mexico gained its independence in 1821, Papagos from Sonora
177 sometimes fled northward into what is now Arizona, intro-
ducing Spanish ways acquired during their longer and more
175 intensive contact with non-Indians. The Gadsden Purchase,
648 which added the lands south of the Gila River to the United
States in 1853, resulted in the Papago Indians losing their
Mexican citizenship, without gaining full United States
citizenship. Their lands were considered at that time as
available for white settlement, and many springs, wells,
and grazing areas were soon claimed by ranchers moving into
the area. The seriousness of the trespass was not recog-
nized in early pioneer days with respect to the vast desert
175 areas west of Tucson. The situation was different, however,
657 with respect to the compact settlement of Indians around
[162] the San Xavier Mission and, for this group, a reservation
was established in 1874 by Executive Order. By this means
about 70,000 acres of land near the Santa Cruz River were
[423] protected from white encroachment. When much of the area
[311] was allotted to individual Indians in 1890, 1,580 acres
were reported to be under irrigation and an additional
6,440 acres were considered suitable for farming if water
could be made available; the remaining acreage was suitable
only for grazing.

175 About this same time, the 1880's and 1890's, a
burst of mining activity (in the area of the present main
reservation) brought a rapid development of many new wells
and the improvement of old ones, to supply the towns that

quickly grew up at such locations as Quijotoa (Covered 175
Wells), Alamo, and San Antone (formerly Weldon, with a
population said to have reached 11,000 at one time). One [312]
by one the mines were worked out or failed, and although [311]
the mining communities were rapidly deserted, the improvements
to the water supply enabled Papagos to occupy the
locations advantageously wherever elaborate well machinery
was not needed.

After the Civil War, the combination of growing 175
Papago herds and numerous ranches established by white 233
settlers resulted in substantial increase in the stock
grazed in the area now included in the Papago Reservation.
Papago "depredations" in the 1890's caused some ranchers to [648]
abandon the area, their losses being alleged to have been [422]
$300,000 in stock and improvements. Lumholtz reported in
1909 that several Papago stock men had herds of about 200
cattle and 50 horses, in excellent condition, in the western
slopes of the Baboquivari Range. Nevertheless, Indian cattlemen
and farmers were not secure in their land and numerous
large tracts were held by non-Indians.

A complete history of the establishment of the 175
three Papago reservations is provided by a Bureau of Indian 657
Affairs report (1944): 13 [114]

> "The first reservation for the Papago Indians was established at San Xavier on July 1, 1874, and the second at Gila Bend on December 12, 1882.... An Executive Order of June 17, 1909, reduced the size of the Gila Bend Reservation.

175 An Executive Order of June 16, 1911, established
small reserves of 80 acres each at Indian Oasis,
657 (now Sells) and at San Miguel. Four Executive
131 Orders of May 28, 1912, established the Maricopa,
Cockleburr, Chui Chuischu, and Tat-Murl-Ma-Kut reservations, and orders of September 2 and October 8 of the same year revised the boundaries of the Maricopa Reservation. An Executive Order of December 5, 1912, restored the Indian Oasis and San Miguel reservations to the public domain, and, in lieu thereof, established new Indian Oasis and San Miguel reservations, and added another at the foot of Baboquivari Peak, Santiergos.

"A sub-agency at San Xavier administered these last three areas as well as the San Xavier Reservation. The other Papago reservations remained under the direct jurisdiction of the Pima Agency. An Executive Order of January 14, 1916, established the 'Sells, Nomadic Papago, or Papago Villages Reservation' which included the area formerly within the Cockleburr, Chui Chuischu, Tat-Murl-Ma-Kut, Indian Oasis, San Miguel, and Santiergos reservations, and added much new land. This action was modified by an Executive Order of February 1, 1917, which changed the reservation boundary and reduced the area by about one fifth, principally in an irregular strip running from east to west through the middle of the reservation where large white cattle ranches were located.

"....An Act of June 28, 1926, authorized the purchase of the Steinfeld and Tierney tracts near Sells. An Act of February 21, 1931, authorized the purchase of patented lands within the Papago Reservation and in the strip and added these and the public domain within the strip to that reservation. An Act of July 28, 1937, authorized the purchase of the Menager Dam Tract and the addition of neighboring public domain and the Lejira Tract to the east of the Papago Reservation. On January 25, 1940, the Romero Tract was bought, and on May 25, 1940, the Marsellar Tract was added.

"The net result of the various Executive Orders and Acts is an area of 2,774,496 acres within the present Papago Reservation, 71,189 acres within the San Xavier Reservation, and

> 10,235 acres within the Gila Bend Reservation, a total of 2,855,920 acres."

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No changes of any importance in Papago land holdings have been made since 1944, but a very important change in the nature of Indian title came about in 1955 when, by Act of Congress, the Papago were given all mineral, as well as surface, rights to the reservation.

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The history of the establishment of the Papago reservations reveals how recently the large majority of Papago have been directly exposed to non-Indian health, education, religious, and other programs. It was not until 1917 that the first federal school was established on the main reservation at Sells and it was not until after 1917 that any attempt was made to develop Papago resources.

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The decades following 1910 also saw a renewal of Catholic missionary work and the commencement of Protestant missionary work. The history of the modern influence of Christianity on the reservations is reported by Joseph, Spicer and Chesky (1949):

> "For several years after 1908, brief trips were made to Gu Achi by various Roman Catholic priests who were stationed on the Pima Reservation. In 1915 a resident priest was given jurisdiction over the area, and he made his headquarters near Ko Vaya (Cobabi). In 1923 Father Bonaventure Oblasser moved the headquarters to Topawa. One or sometimes two priests served the reservations for the next decade, carrying on the work of the church and directing its mission schools, which were taught by young Papago. Visits were seldom made to the westernmost part of the reservation,

> 175 177 797 and it was not until the 1930's that an increase of personnel brought an expansion of Catholic Missionary work.
>
> "Systematic Protestant missions to the Papago started in 1910, when a Presbyterian missionary began to make regular trips to the main reservation. By 1912 a church and school of that denomination were established at Indian Oasis. Two years later a church and school were set up at San Miguel, and, in 1920, churches were built in Vamori and Topawa. Some older Sonora Catholics were converted; often their children were in boarding school, and word was sent that the children should now attend Presbyterian Sunday School instead of Catholic services. The third generation of Presbyterians is now beginning to grow up, and the membership, a minority on the reservation, remains mostly in the families of the eastern district who were first converted."

175 177 657 Even though scattered schools and churches were established on the main Papago reservations after 1917 and some work was done in the development of stock water and irrigation systems, the most important events in the recent history of the Papago took place after 1930. The most important of these events were the "liberalization" of federal control over the lives of Indians, changes in Indian attitudes toward an improved way of life which took place during and after the second World War, and the appropriation of more adequate federal funds for Indian education, health, resources development, and many other purposes after the early 1950's.

175 657 The nearly absolute control over the lives of Indians which marked governmental policies during the early part of the twentieth century, was finally ended in the

middle 1930's under the influence of John Collier, Commissioner of Indian Affairs. His program, in part, was embodied in the Indian Reorganization Act, which contained specific provisions for the preservation of Indian land holdings and the assumption by Indians of some measure of control over their own resources; authorization for the establishment of tribal self-government and federally chartered tribal business corporations; and the establishment of a revolving loan fund for economic development purposes. The intention was to solve Indian social and economic problems through the development of Indian initiative, but it was a "boot strap" program unsupported by necessary governmental appropriations for the training of Indian leaders and the development of Indian organizations, not to mention inadequate appropriations for education, health services, resources development, and routine administrative services. In the case of the Papago, among many other tribes, the program also lacked effectiveness because the majority of individual Indians were not yet committed to any major changes in their way of life. 175 657 [185]

Under the provisions of the Act, Papago Indians living on the main reservation and on the reservations at San Xavier and Gila Bend, joined together to form a single tribal government with headquarters at Sells. The tribal constitution and by-laws, however, provided for an important degree of local autonomy under a system of district councils with each district having two members on the tribal council. 175 642 [631]

175 631 San Xavier and Gila Bend were each treated as a district and the main reservation was divided into nine districts which conformed with the grazing districts previously established by the Bureau of Indian Affairs. The nine districts on the main reservation are: Baboquivari, Chukut Kuk, Gu Achi, Gu Vo, Hickiwan, Pisinimo, Schuk Toak, Sells, and Sif Oidak. (See Map 1)

175 177 185 The experience of individual Papagos in the armed services and in employment in war industries during World War II, was the second important event in recent Papago history. Those experiences opened the eyes of many of the younger Indians to the difference between the poverty of a subsistence life on the reservation and the relative prosperity obtainable through participation in the job opportunities and the economy of the non-Indian world around them. They realised that to take advantage of these opportunities they, and their children, would have to secure an education, learn how to live in outside communities, and adapt their social habits and family life to the demands of an industrialised society. They also learned that some of the miseries of extreme poverty could be avoided if welfare programs were extended to their villages, and that high death rates, particularly among infants, could be reduced through the acceptance of modern medical treatment.

175 657 Upon the basis of these changes in Indian interests and demands, the Bureau of Indian Affairs and interested

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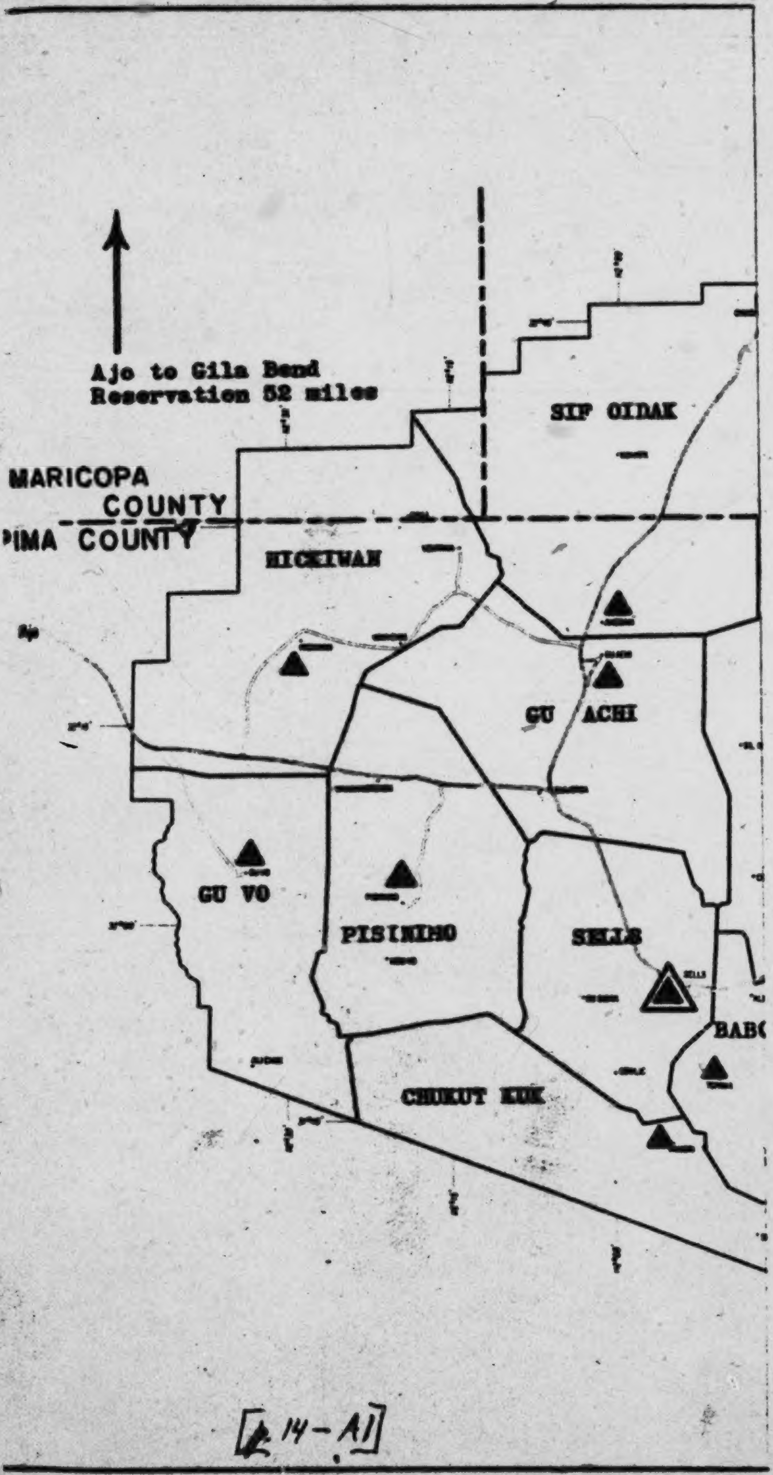
Ajo to Gila Bend
Reservation 52 miles
MARICOPA
COUNTY
PIMA COUNTY
SIF OIDAK
HICKIWAN
Ajo
GU ACHI
GU VO
PISINIMO
SELLS
BABO
CHUKUT KUK

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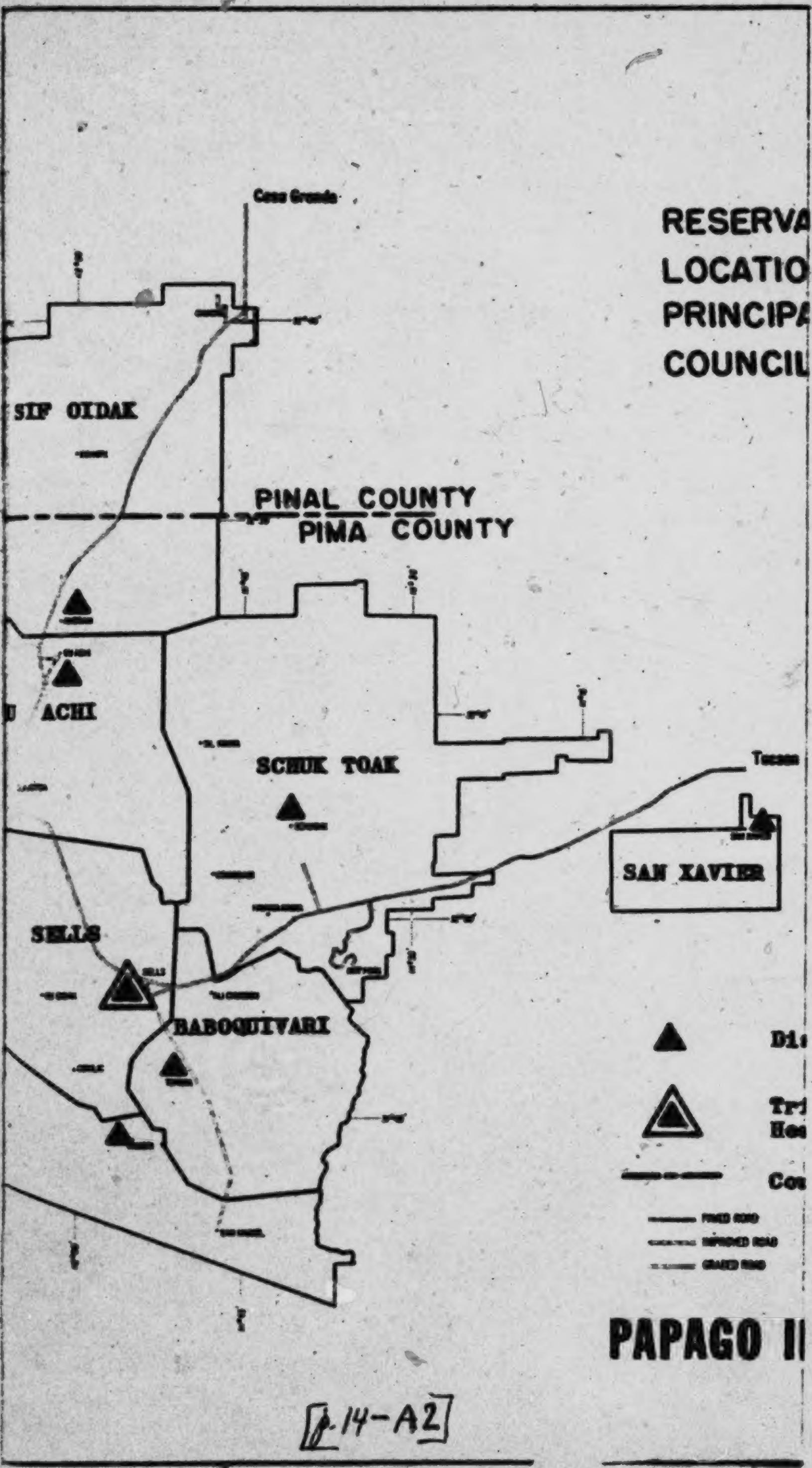
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LOCATIO
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Casa Grande
SIF OIDAK
PINAL COUNTY
PIMA COUNTY
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PAPAGO I

18: Kelly E-4, 5 (no date) 1963 NU28 Papago NU28

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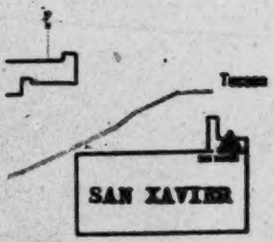
MAP I

RESERVATION DISTRICTS WITH LOCATION OF COUNTY LINES, PRINCIPAL TOWNS & DISTRICT COUNCIL MEETING PLACES



▲ **District Council Headquarters**

△ **Tribal and District Council Headquarters**

▬ ▬ ▬ **County Line**

PAVED ROAD

IMPROVED ROAD

GRADED ROAD

PAPAGO INDIAN RESERVATION

1963

[Q·14-A3]

members of Congress were able to bring about the third event in Papago history: The appropriation by Congress of reasonably adequate funds which would make possible the program of Indian development which had its start in the early 1930's. In education, programs for the establishment of a new public school at Sells, adequate school bus service reaching isolated communities, and the construction of a day school and boarding school at Santa Rosa, have been completed only in the last ten years. Even though there had been a small hospital at Sells prior to 1947, serious programs in health education and preventive medicine were not introduced until about ten years ago. This was followed by the construction of a modern 50-bed hospital in 1960.

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[743]

The recent history of the building of school facilities and records of school attendance on the Papago Reservation, provides the perspective against which to judge the inadequacy of training and experience which will handicap the adult Papago population in the years ahead. As recently as 1945 only about 800 children of school age were attending classes in public, federal and mission schools. Another 450 were enrolled but not attending classes and 800 Papago children were not enrolled in any school. In brief, considerably fewer than half of the eligible Papago children were in regular school attendance by the end of World War II. The deficiency, thanks to a variety of federal, state, and Catholic mission school programs has now been almost entirely corrected.

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185 Educational and health programs are, of course, basic. Other programs for the development of human and natural resources on the reservation have received almost equal attention from the Papago Tribal Council and the Bureau of Indian Affairs. These include the development of better roads and communication services, employment services, welfare and social services, economic development programs, and many others.

128 The chapters that follow will treat in detail the nature of resources development on the reservation, and will describe the nature of the Papago population, its economic position, and its manpower resources. The information thus provided, it is hoped, will assist everyone concerned, and most particularly the Papago themselves, in planning for the future.

CHAPTER II

THE PAPAGO RESERVATION AND ITS POPULATION

Location and Size of the Reservation. The main Papago reservation occupies a large part of the southern half of Pima County, and a corner of each of Pinal and Maricopa counties. With a total area of 2,770,436 acres, the reservation stretches for 60 miles along the Mexican border and has a maximum north-south distance of almost 90 miles. In addition to the main reservation there are two outlying reservations, one at San Xavier near Tucson, and one near Gila Bend. The two together comprise 81,394 acres, 71,159 acres at San Xavier, and 10,235 at Gila Bend.

To the north of the main reservation, within 40 to 50 miles, lie Phoenix and the Salt River Valley, the most densely populated section of the state. Large-scale farming and rapid town growth are also creating a zone of intensive commercial activity close to the northeast boundary of the reservation, extending southeast from Casa Grande through Eloy and Marana to Tucson. The San Xavier Reservation is, in fact, now abutted by dense suburban development and growing industrial activity as a result of Tucson's expansion to the reservation boundary on the east and north.

131 To the west, the main reservation is bordered by Organ Pipe Cactus National Monument, by the copper mining area around Ajo, and by the vast Williams Bombing and Gunnery Range.

133 Topography. The reservation and adjacent areas lie within the Basin and Range Province, which is characterized physiographically by a complex geological history which has resulted in numerous small mountain ranges separated from each other by broad alluviated areas of extremely slight relief. Along the eastern border of the main reservation are the Baboquivari Mountains with the highest elevation at 7,730 feet. The elevation of the alluvial plains which makes up the greater part of the area is about 2,500 feet in the southeast part of the reservation, sloping almost imperceptibly downward to the north and west; on the west the elevation is about 2,000 feet, and at Chuichu in the extreme north it is 1,500 feet.

The reservation is drained by numerous intermittent streams or washes. The major drainage of the northern area is through the Santa Rosa Wash northward toward the Santa Cruz and Gila rivers; the western area is dominated by Vamori Wash, flowing towards the northwest and then turning sharply south where it meets the San Simon to flow into the Sonoita River in Mexico. These streams are fed by a network of numerous small tributaries. Except immediately after a heavy rain the streams are dry.

Soils and Minerals. The greatest portion of the Papago Reservation is composed of alluvium weathered from the scattered hills and mountains, and which grades from coarse to fine as distance increases from the source. In the valley floors the soil varies from fine sand to sandy clay and clay, all suitable for agriculture where water is available. 134

Although in the latter part of the nineteenth century mining brought large numbers of people to the Papago country and several sizable settlements flourished for brief periods, mineral resources have not yet been discovered which would be suitable for large-scale, long-term development. No oil or gas has been found, and promising formations are absent. Highly mineralized formations, mainly Pre-Cambrian and Mesozoic, have produced limited amounts of gold, silver, lead and manganese. Workable copper deposits exist close to and on the San Xavier Reservation, and are being mined on a large scale. 135

Climate. The Sonoran Desert, in which the Papago country lies, is part of a series of deserts occupying about 440,000 square miles in the southwestern U. S. and northwestern Mexico. It is desert in both the colloquial and technical senses, with potential evaporation 8 to 10 times greater than rainfall. Although long records of rainfall, temperature, and other details of weather are scanty for the Papago Reservation, recent records can be used in conjunction 137 132 127

132 [127] with data from nearby areas such as Tucson and Ajo to provide a sufficiently accurate picture for this report (see Map 2.) The highest precipitation is in the Baboquivari Mountains, where the annual average is about 20 inches at high elevations. A few miles to the west, at lower elevations, the annual average is only 12 to 14 inches, and as one goes toward the west and north the trend is steadily drier, with average rainfall of 10 inches or less at the west edge of the reservation and less than 7 inches at the extreme north. Fully as important as the general scarcity of precipitation is the nature of its occurrence--divided between a summer season of scattered, intense storms from July to mid-September, and a winter season of gentler, more widespread rains from early December to early March. The annual total varies tremendously for any locality, so that averages mean little to anyone depending on rainfall during any given year for farming and stock raising. At Ajo, about 10 miles beyond the western edge of the reservation, records have been kept since 1914. For every month but July and August a monthly total of zero inches has been recorded at least once, and even July and August have had monthly totals as low as 0.04 and 0.20 inches respectively.

Although temperature and humidity are less crucial components of the climate than is precipitation, the long, hot season prior to the summer rains, the characteristically low humidity throughout the year, and the wide daily range in temperature are significant factors in the enviroment.

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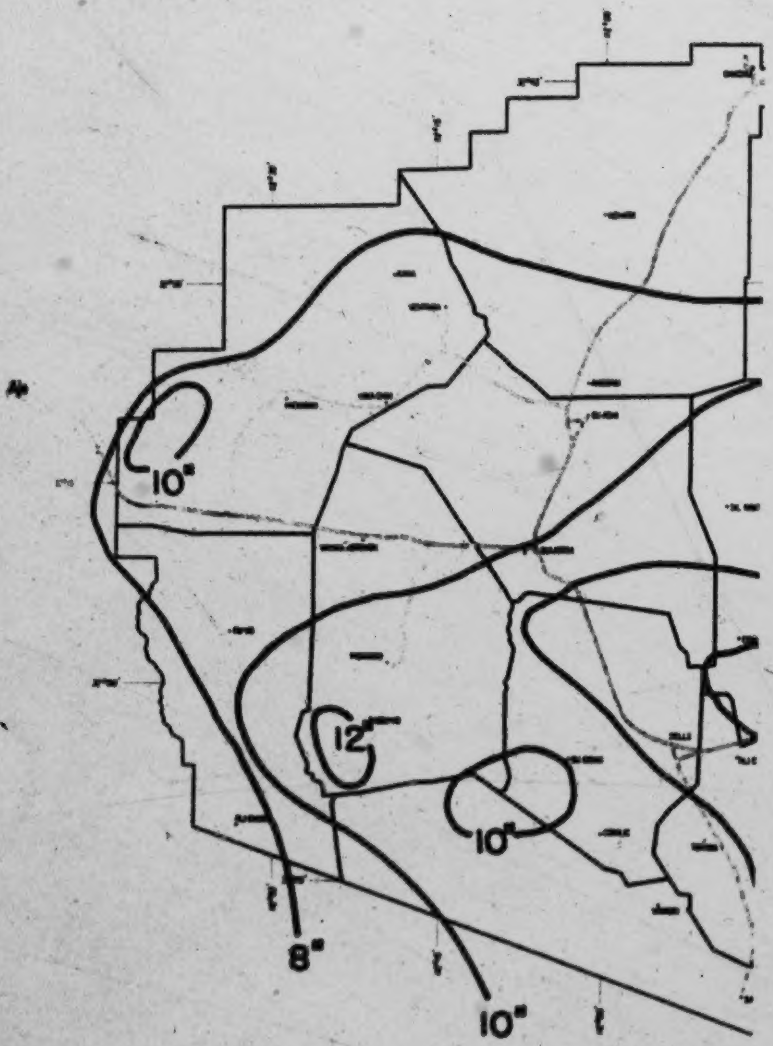
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[p.20-A1]

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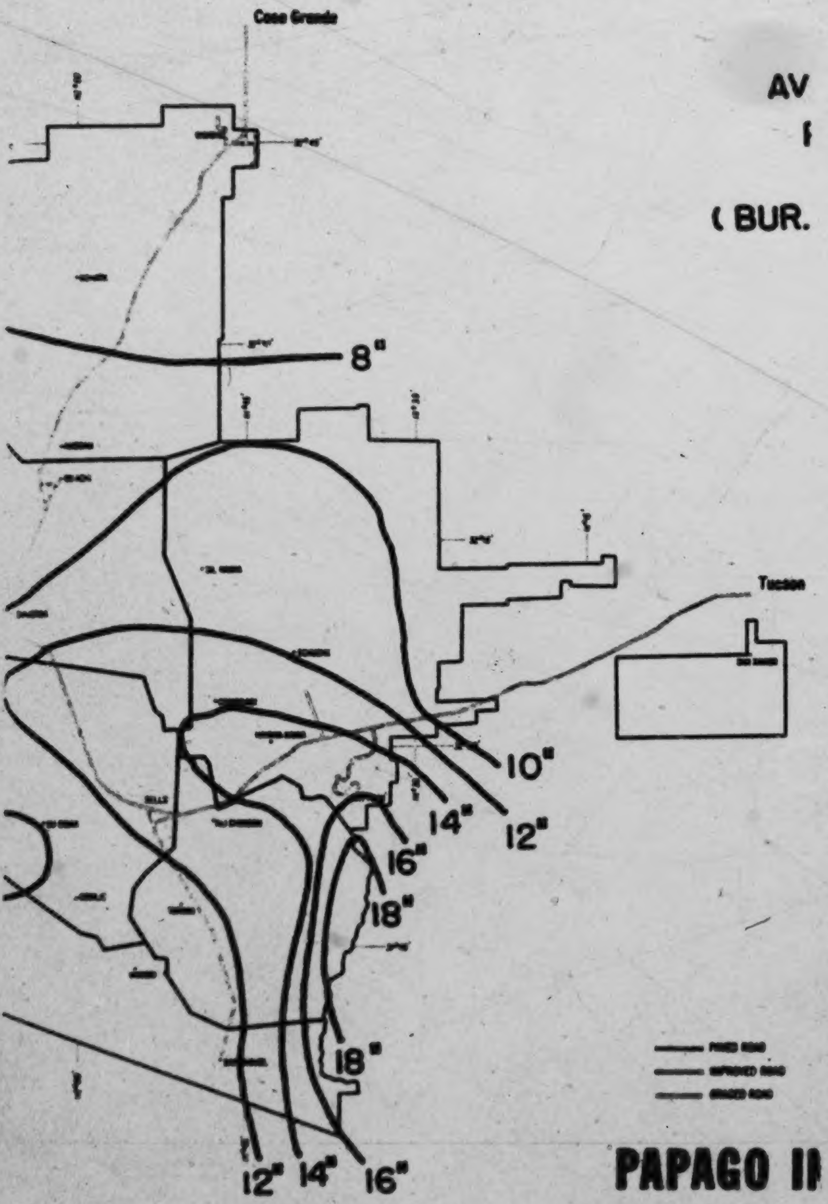
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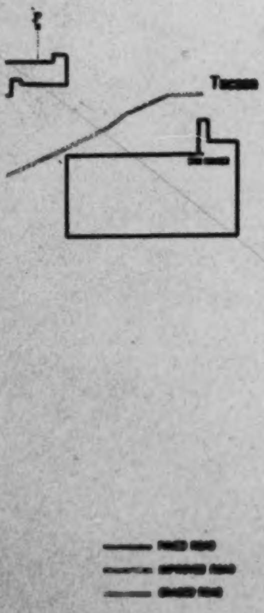
MAP 2

AVERAGE ANNUAL PRECIPITATION

(BUR. LAND OPER. RECORDS)



PAPAGO INDIAN RESERVATION

1963

[A20-A3]

With unimportant exceptions at the highest elevations, the average daily temperature (maximum plus minimum divided by two) in July is about 90° F. and in January about 50° F. In the winter, temperatures sometimes go below freezing, as clear nights result in intense radiation. The growing season, however, between the last spring frost and the first fall frost, ranges from 250 to 300 days. Since the first fall frost comes late (at Ajo, December 16; at Tucson, November 19), there is generally a period of 100 days or more after the start of summer rains in July before crops might be damaged by the cold.

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Table 1. Temperature and Growing Season at Selected Locations On and Near the Papago Reservation

Location	(Degrees F) Temperature		Killing Frosts		Growing Season
	Max.	Min.	Spring	Fall	
Fresnal School	113	13	Mar. 16	Nov. 21	250 days
Tucson	111	6	Mar. 19	Nov. 19	245 days
Ajo	115	17	Jan. 27	Dec. 16	323 days
Casa Grande	122	17	Mar. 19	Nov. 19	255 days
Gila Bend	123	11	Feb. 16	Nov. 30	287 days

(From "Soil Conservation Program, 20-Year Period, Papago Agency, Sells, Arizona, 1954", File 344.11, Papago Agency, Office of Land Operations, Sells.)

137

Flora and Fauna. In a few bottom lands along the larger streams there were formerly dense stands of mesquite, the trees reaching heights of 30 to 40 feet. Remnants of these survive, and scattered mesquite trees occur throughout the reservation. The extent to which mesquite has invaded the grass lands is a subject of dispute among botanists and ecologists, but there is no doubt that in many parts of the deserts of the Southwest formerly lush stands of grass have been partly replaced by mesquite, cactus, and various shrubs.

Most of the Papago Indian Reservation is within the area of two major vegetation patterns -- at higher elevations and on rougher terrain, the dominant plants being paloverde, bur sage, and cacti, and at lower elevations creosotebush and desert saltbush. These and many less conspicuous plants are highly adapted to desert conditions. Many parts of the reservation typify what has been referred to as the "giant cactus forest" -- the sahuaro towering above dense stands of paloverde, shrubs, and cacti.

"The desert land grass cover is made up of a perplexing number of species, very many of which are excellent range-grasses" (A. A. Nichol, the Natural Vegetation of Arizona, p. 198.) Aside from overgrazing, increased

aridity, and the replacement of grass by mesquite, shrubs, 137
and cactus, the distribution and abundance of grass is closely controlled by precipitation, with most of the growth taking place each year in August. In general, the best grassland is at the higher elevations of the reservation (excepting the rougher summits of the mountains and ridges), that is, on the slopes of the Baboquivari Mountains and in other scattered locations where precipitation is favorable. In this connection it is of interest that Richard J. Hinton described the country for 38 miles west of the Baboquivari Mountains as "fine grazing land" in 1878 (The Handbook to Arizona), whereas the grass got progressively poorer as he travelled further west.

A large number of the common desert plants were 824
traditionally used by the Papago, particularly as food,
and also as the materials of which houses, baskets, and
numerous tools and utensils were constructed. Particularly 222
important were the fruits of the sahuaro and mesquite and
seeds of sacaton grass, and pigweed or amaranth. From [262]
spring through late summer, many plants were valued as
greens, contributing importantly to the diet: lambsquarter,
canaigre, the buds of the cholla, the mescal or century
plant, sotol, and others.

222 The collecting and preparing of these plant foods was time-consuming
178 and required a specialized knowledge of their
potentialities with the result that their use is gradually
disappearing. Nevertheless, some of these wild foods will
continue to contribute a minor part of the diet for some
time to come

136 In contrast to the variety and relative importance
of wild plant sources of food, the desert offered only a
224 sparse animal life for economic exploitation. Before the
introduction of horses and cattle, the mule deer was much
more abundant and widespread and was the chief game animal
of the Papago. Of less importance were the white-tailed
deer, the antelope, mountain sheep, and the peccary or
javelina. Small animals were also hunted, particularly the
jackrabbit, the cottontail rabbit, and the packrat. Game
[223] birds, such as the quail and dove were also important. In
general, hunting of larger animals was an occupation only
occasionally indulged in by a few men; other animals were
hunted more systematically, but hunting was always a relatively
minor activity for the Papago. The small scale of
more recent use of faunal resources is indicated by the fact
that, during World War II, "due to the wartime price of fur,
eight whites and two Papagos . . . (were) engaged in trapping
and making considerable money at it" (Program, Papago
Reservations, 1944, p. 15).

Soil and Erosion. Since farming and stock raising are important means by which the Papagos use the resources of their reservation, the nature and especially the present condition of their soils is of great importance. The soils of the area include much fine alluvial material, and frequently have only very sparse coverage of vegetation. Much of this cover has been reduced by overgrazing, and even before the introduction of stock there were numerous areas where heavy summer showers or the frequent strong winds of the dry spring period caused substantial erosion. By no means all of this could be prevented, but increased erosion within the past century has seriously interfered with flood water farming by cutting deep gullies where water formerly spread out on alluvial plains and by depositing coarse unsorted material on top of cultivable land. 134 311

Periodic surveys of the reservation have recorded the extent and severity of erosion (see Soil Conservation Program, 20-Year Period). Wind erosion is particularly serious in the lighter soils of the Chukut Kuk, Pisinimo, Sohuk Toak, and Sif Oidak districts. All districts have extensive gully erosion on steeper slopes. Sheet erosion on flatter areas occurs particularly in Baboquivari, Gu Achi, and Hickiwan districts. Nearly half of the 10,297 acres of the Gila Bend Reservation are classed as showing Severe or Critical erosion. About a third of the San Xavier Reservation (25,210 out of 71,090 acres) are Severe or Critical. 134

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134 On the main Papago Reservation, erosion is reported as follows:

Slight	193,534
Moderate	1,183,840
Severe	1,160,060
Critical	237,100
	2,774,534

The individual districts, arranged in descending order of magnitude, are reported in Table 2. It is apparent from these figures and from a 1948 map of erosion conditions on the reservation, that large relatively flat areas in Sohuk Toak District (especially on the southwest side of Aguirre Wash), in Gu Achi and Sif O'dak Districts (along Santa Rosa Wash), and in Chukut Kuk District are critically eroded, together with smaller areas in Sells, Baboquivari, and Pisinimo. Severe erosion is present in nearly all parts of the reservation, and the moderate or slight erosion areas tend to be concentrated in the central, southeast, and extreme northwest parts of the reservation.

[185]
[312] Both in order to increase grass for forage and to control erosion, extensive areas have been provided with earth dams and with spreader dikes designed to distribute water more evenly and reduce the rapid and damaging runoff
[311] from summer storms. Nevertheless, erosion continues to be a serious problem and its effects limit both carrying capacity for stock and possibilities for flood water farming.

Table 2. Soil Erosion Conditions on the Papago Reservation, In Acres (Based on Data in Files of Branch Of Land Operations, Papago Indian Agency, Sells)

	Slight	Moderate	Severe	Critical	Total
Schuk Toak	13,774	97,920	252,160	92,800	456,654
Sif Oidak	44,800	189,440	178,880	22,628	425,748
Hickiwan	38,400	171,520	68,723	5,142	373,782
Gu Achi	4,860	119,680	157,440	11,025	293,025
Chukut Kuk	24,960	103,040	103,520	48,765	284,285
Pisinimo	16,640	126,720	127,560	10,960	281,680
Gu Vo	29,440	110,074	90,240	2,560	232,314
Sells	4,480	127,846	58,240	24,960	215,258
Baboquivari	16,180	136,960	38,400	19,360	210,882

Note: The Soil Erosion Service categorizes these conditions thus:

Slight:	No apparent acceleration of normal geological erosion.
Moderate:	Less than 5 inches of topsoil removed.
Severe:	From 5 to 9 inches of topsoil removed.
Critical:	More than 9 inches of topsoil removed.

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Availability of Water. As is true of all of Arizona south of the Gila River, water for the Papago Reservations must come from deep wells. Water from this source, in proven or probably quantity (more than 200 gallons per minute), occurs in three broad valleys, evenly spaced from east to west across the main reservation and in four localities along the northern, southern, and eastern borders (see map 3).

312 map 3). In addition, water in quantity has been found in
133 the limestone rocks in the northeastern corner of the reservation and in the volcanic rocks that cover the western section (Heindl and others, 1961). Ground water at an economical depth also occurs on both the San Xavier and Gila Bend reservations.

It would appear from the Heindl report that ample water is available for residential, industrial, and stock water purposes in all sections of the reservations except in the mountainous areas. The community of Sells, for example, had a local supply of ground water which yielded approximately 250 gallons per minute. When additional water was required for the operation of the new Sells hospital, two wells, yielding about 450 gpm, were developed five miles to the west. When additional supplies are needed in the future, proven water bearing ground can be tapped in a wide
[361] valley area three miles beyond the hospital wells. Communities located in the valleys, of course, would have ample local supplies. Such locations are Chuichu, Santa Rosa, Gu Oidak (Big Fields), Vamori, and San Miguel.

Water for irrigated farming on the reservation is limited by the lack of ground water at a depth which permits pumping at a sufficiently low cost for agricultural purposes. Water at depths less than two hundred feet is found only near Chuichu, in the Tat Momoli Valley to the south, and in the Santa Rosa Valley to the southwest. Water

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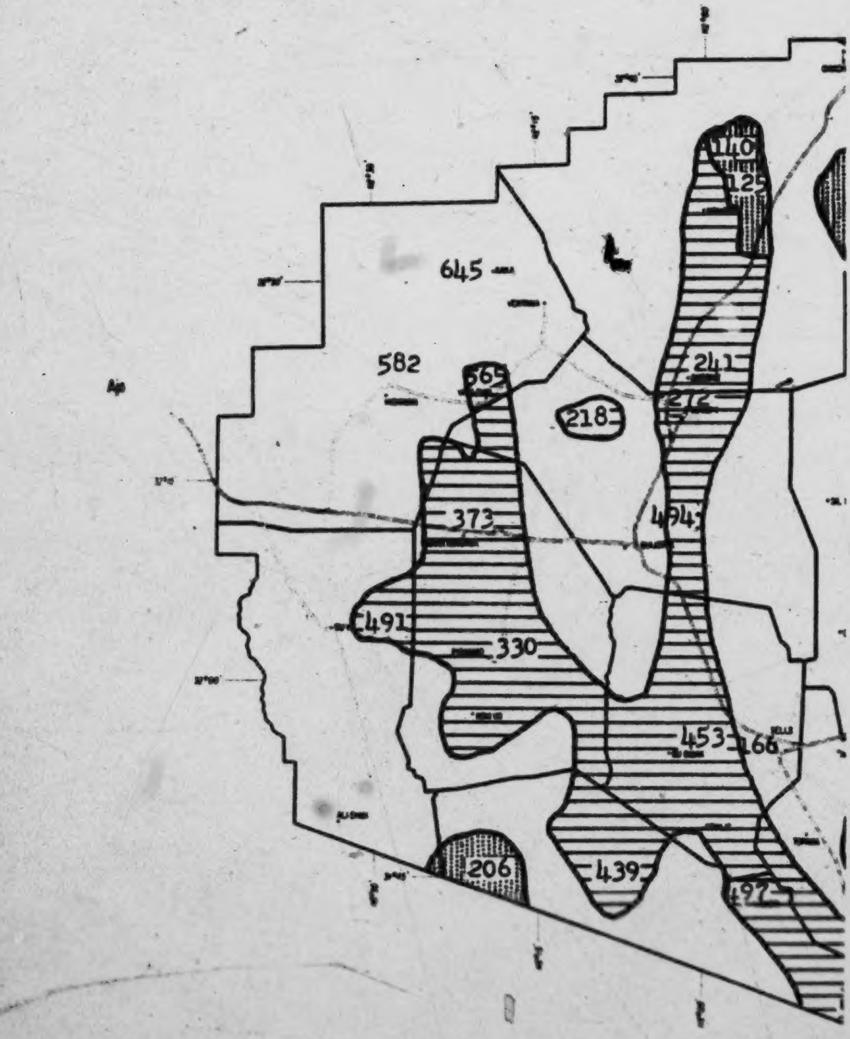
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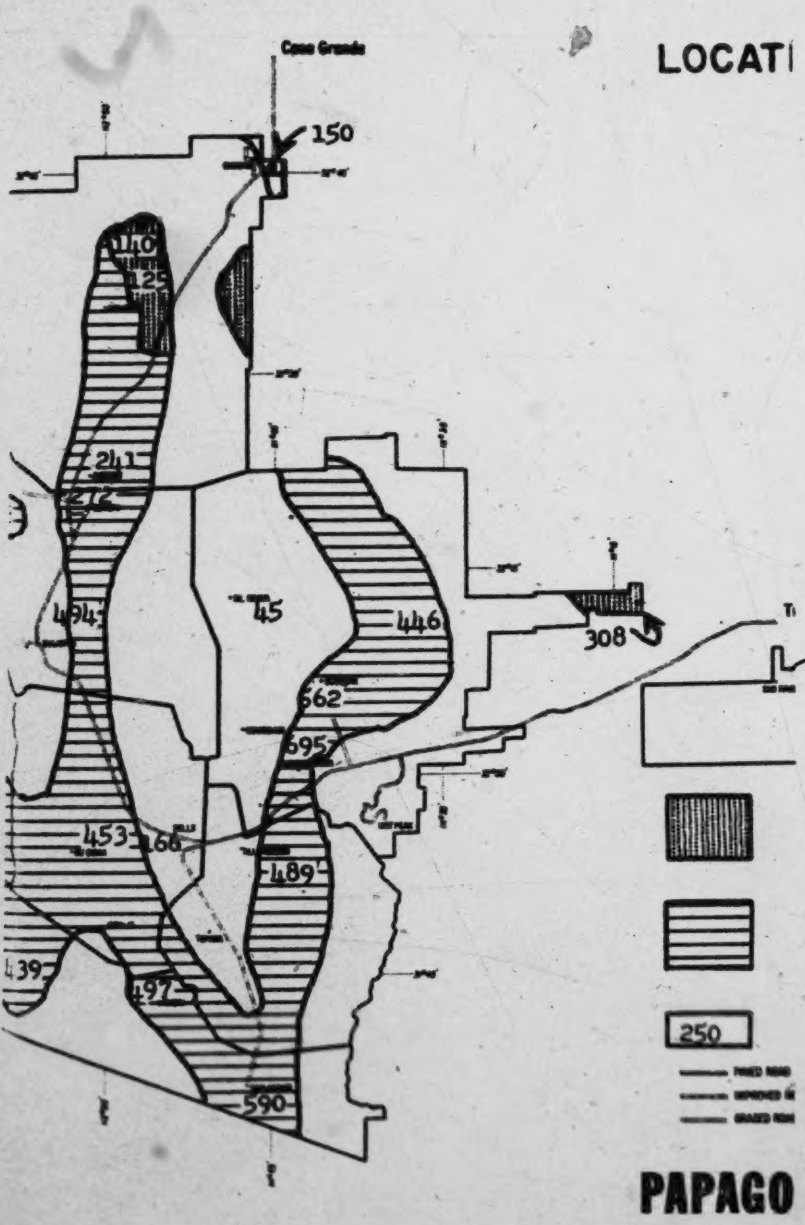
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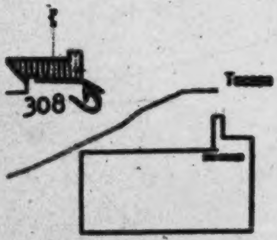
MAP 3
LOCATION OF GROUND WATER

(From Heindl and Others)



▥ **Areas where Ground Water Used, or Is Considered Sufficient for Irrigation.**

▤ **Areas where Ground Water at 200 Gallons per Minute, or More, May Be Encountered at Depths of 100 to 600 Feet.**

250 **Depth to Water in Feet from Land Surface for Selected Proven Sites**

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— [illegible]
— [illegible]

PAPAGO INDIAN RESERVATION

1963

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at 150 feet with a 100 foot draw-down is available at Papago Farms in the southwestern corner of the reservation. Water elsewhere is found at from 200 to 600 feet. Heindl reports on irrigation possibilities as follows (Heindl, p. 19):

> "Ground water is used, or is considered to be sufficient, for irrigation in five areas on the reservation. These are: (1) east of Chuichu, where about 1,200 acres are being irrigated; (2) the Santa Rosa Valley northeast of Kohatk, where pumping tests indicated potential yields of 1,000 gpm with draw-downs of about 50 feet; (3) the west-central part of Tat Momoli Valley along the reservation boundary, southeast of which commercial irrigation is now practiced; (4) the east end of the panhandle in T.14 S., R. 11 E., which is in Avra Valley, an extensively irrigated basin; and (5) the Molenitus Valley in the southwestern part of the reservation, where quantities of water adequate for irrigation recently have been proved.
>
> "Information gained from examination of well cuttings and from bailing tests suggests that two other areas probably have sufficient ground water for irrigation development, but more adequate testing is needed for proof. These are Window Valley (west of Gu Achi) and the south central part of Gu Cidak Valley (west of Sells). The rest of the areas that are outlined as part of the deep alluvial aquifers probably would yield water in sufficient quantity for irrigation development also. The alluvium in these areas is tapped only by wells of small yield equipped with windmills, but, because of the topographic setting and the fact that the alluvium is thick, potential yields of wells may be much greater. Thorough testing of the alluvium, however, should precede its development to pump irrigation."

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Water from wells on the reservation generally meets the chemical-quality limits suggested for domestic and public supply used by the U. S. Public Health Service

312 except in the southwest quarter of the reservation and other small areas where the fluoride content is greater than 1.5 parts per million, the maximum suggested for domestic use (Heindl, p. 22).

175 312 *Reservation Water Development.* Prior to the systematic and extensive drilling of deep wells in the Papagueria, the Indians depended, during the long winter and spring period, upon a few widely scattered tanks and springs, which tapped small portions of the ground water supply. In some instances, shallow wells were dug to supplement natural water sources near the winter villages. During the summer and fall, at least, man-made catch basins (charcos) could be depended upon to hold a supply of water originating from run off from the heavy summer thunderstorms.

The brief and intensive period of mining activity in the late 19th Century was marked by the first large-scale use of ground water. Numerous relatively deep wells were dug or drilled, some of them continuing to supply Papago villages after the mining ventures came to an end. Nevertheless, wells remained few, more important for limited domestic use than to support the large numbers of cattle and horses grazed on the Reservation.

175 312 657 311 The first large-scale program of water development by the Bureau of Indian Affairs was in the middle 1930's. At that time 56 wells, 18 dams, 41 masonry storage

tanks, and 76 earth-walled tanks (charcos) were built. 175 Water thus supplied not only permitted the year-round use 312 of the range but permitted cattlemen to place their cattle 657 in areas formerly not usable because of lack of water. 311 Nevertheless, it was reported as late as 1949 that "only 40% of the Papago range is now within reach of permanent stockwater" (The Papago Development Program, 1949, p. 30). This situation, of course, tended to accentuate the overgrazing of areas with a better water supply.

From 1953 until the termination of the program in 175 1958, the Papago Development Program expended $1,041,181 on 312 stockwater development, including not only wells, but wind- 657 mills, power pumps, dams, storage tanks, and similar construction. During this same time deep wells were drilled to supply water for the Chuichu farm development.

Since 1958, with the completion of the well drilling 185 program, emphasis has been upon range development and 312 soil and moisture conservation. During the past five years, to June 30, 1963, about $500,000 has been expended for these purposes, mostly in the construction of detention dams.

At the present time there are 23 irrigation wells 312 operating on the main reservation and at San Xavier. In addition there are 160 wells for domestic and stock water use, on the main Papago Reservation, six at San Xavier and two at Gila Bend.

312 657 During 1960 the Public Health Service initiated a program to provide domestic water and improved sanitation facilities in Papago villages where local arrangements could be worked out, and where water could be supplied from existing wells or developed at reasonable cost.

Under this program, local Indians provide necessary labor for the installation, purchase purely personal items of equipment, and establish a system for local maintenance of the water lines and tanks. The Public Health Service provides the equipment and pipe for a water distribution system, including a water line to each home.

The current program will continue until all villages that meet the necessary requirements have been supplied with water distribution systems and sanitary facilities.

At the end of June, 1963, the following village water projects had been completed: Quijotoa, Kaka, Hotason Vo, Havana Nakya, Sil Nakya, and Schuchuli. In the case of the latter two only well improvement was programmed. Work is in progress in the following villages: Topawa, Pisinimo, Ali Chuk, Gu Vo, and Viopuli, and work is expected to start in the near future in Santa Rosa, Cowlic, Anegam, and Gu Komelik.

206 365 491 Public Utilities and Transportation. Good roads, power lines, and telephones are usually found side by side on the reservation, reaching, of course, the principal centers of population. Roughly speaking, this involves the arc

from the eastern border of the reservation near Three Points, through Sells, Quijotoa, and Santa Rosa to Chuichu with a branch running south from Sells to San Miguel and a second branch running west from Quijotoa to Ajo. The neglected areas, and the areas of smallest population, are in the east central (Schuk Toak District) and in the northwest and southwest sections of the main reservation (See map 4). 206 365 491 [184]

Roads. A paved state highway (86) crosses the central section of the reservation, connecting Tucson and Ajo. Reservation villages served by this highway are: Havana Nakya, Ali Chukson, Sells, Quijotoa and Wahak Hotonok (San Simon). A paved county highway connects the observatory on Kitt Peak with Highway 86 about 10 miles inside the eastern boundry of the reservation. Another paved highway, built and maintained by the Bureau of Indian Affairs, connects with Highway 86 at Quijotoa and runs north to the reservation line near Chuichu. Here it connects with a paved highway into the town of Casa Grande on State Highway 84. This road serves the villages of Santa Rosa, Anegam, Gu Komelik and Chuichu. 491

Except for the paved roads mentioned above the only standard all-weather road on the reservation is from Sells to San Miguel, a distance of about 25 miles. Five additional miles of standard roads are found in the loop connecting Gu Achi with the Quijotoa highway and in the irrigated district at Chuichu. San Xavier is served by a paved highway which

491 connects with Mission Road on the west and by a graveled highway which connects with the Nogales Highway on the east.

The Bureau of Indian Affairs classifies other roads on the reservation as (1) standard, graded, unsurfaced (79.6 miles), (2) sub-standard, graded, unsurfaced (10.7 miles), and (3) not graded, not surfaced (335.6 miles).

The graded, unsurfaced roads are as follows:

1. About four miles north of the Sells-Tucson highway toward Schuchk (Santa Rosa Ranch). (BIA P-13)

2. From the Sells-Ajo highway to Pisinimo. (BIA S-5)

3. West of the Quijotoa-Chuichu highway near Santa Rosa to Ventana, Vaya Chin, Hickiwan and south to the Sells-Ajo Highway. (BIA P-6 and P-1)

4. South of the Sells-Ajo highway from Schuchuli to Gu Vo. (BIA P-1)

5. Some sections of otherwise ungraded roads.

206 Telephones. Nineteen villages and communities on the main reservation and San Xavier, near Tucson, are connected by telephone with each other and with the surrounding non-Indian country, through a system operated by the Mountain States Telephone and Telegraph Company. These are: Kitt Peak, Schuchk (Santa Rosa Ranch), Havana Nakya, Ali Chukson, Sells, Topawa, Fresnal Canyon, Vamori, Choulic, San Miguel, Quijotoa, Santa Rosa, Anegam, Gu Komelik, Ventana, Vaya Chin, Wahak Hotonok (San Simon), Gu Vo, Chuichu, and San Xavier.

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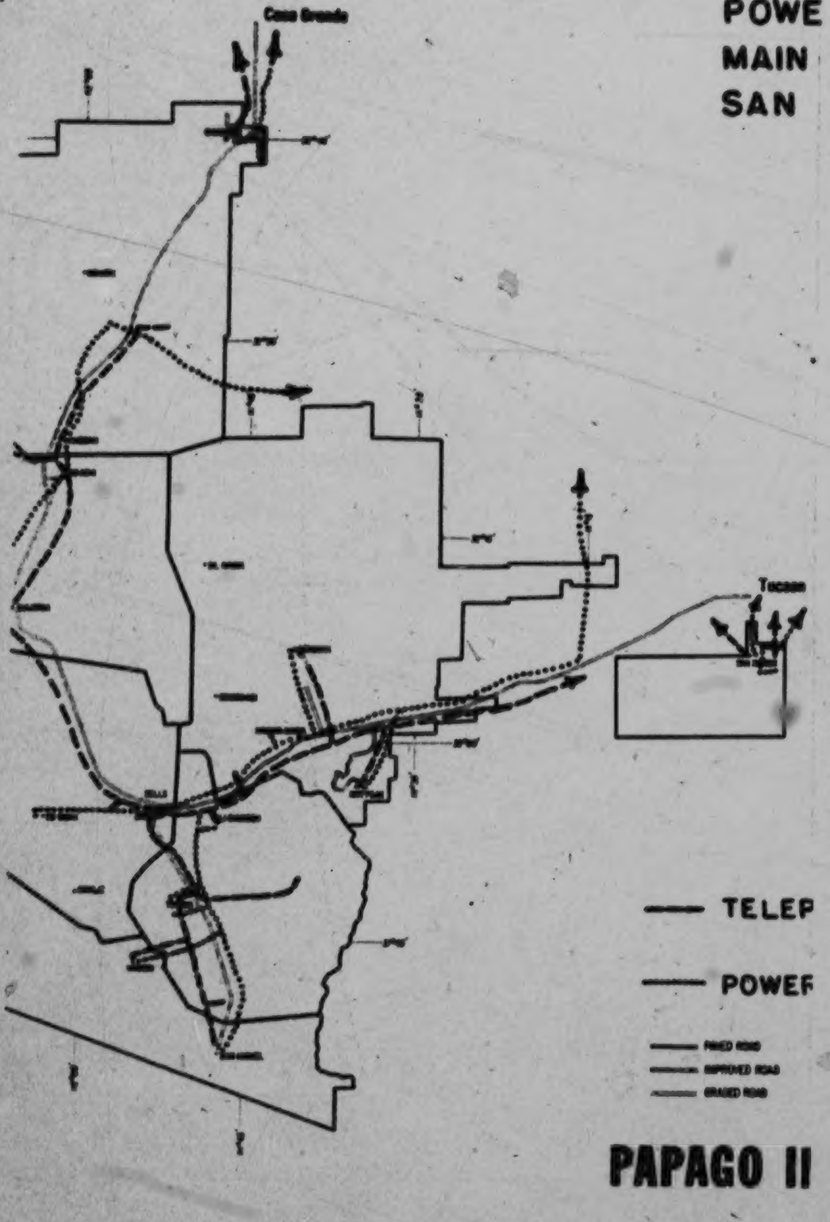
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SAN
Casa Grande
Tucson
TELEP
POWEF
PAVED ROAD
IMPROVED ROAD
GRADED ROAD
PAPAGO II

[p.34-A2]

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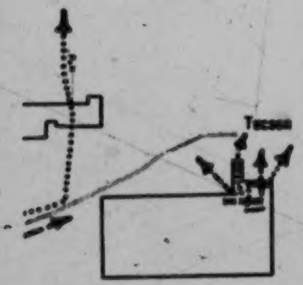
200
365
491

MAP 4

POWER & TELEPHONE LINES MAIN PAPAGO RESERVATION & SAN XAVIER



— TELEPHONE LINES

— POWER LINES

[illegible]

PAPAGO INDIAN RESERVATION

1963

[p.34-A3]

Some telephone lines not taken over by the Mountain States company are maintained by the Bureau of Indian Affairs and some, formerly operated by the Bureau of Indian Affairs, have been abandoned. The BIA lines run from Choulic to San Miguel, the Ajo highway to Pisinimo, and a branch line to Ventana. Service lines from the Ajo highway to Hotason Vo (Charco 27) and Hickiwan, from Gu Vo to Pia Oik, and from Gu Komelik to Chuichu have been abandoned. Chuichu is now served through the Casa Grande exchange. 206

Power Lines. Both the Tucson Gas, Electric Light 365 and Power Company and Trico Electric Cooperative serve the San Xavier Reservation. On the main reservation, Trico lines carry power to Schuchk, (Santa Rosa Ranch), Havana Nakya, Ali Chukson, Sells, Gu Oidak, Topawa, Vamori, Supi Oidak, Choulic, San Miguel, Quijotoa, Santa Rosa, Anegam, Gu Komelik, and Lake Shore Mine. Chuichu is served by San Carlos Power and Kitt Peak is served by its own line which connects with the Trico line on the Tucson-Sells highway.

Radio. There are two base stations for radio com- 207 munication on the main reservation. One is operated by the Bureau of Indian Affairs administration office and the other by the BIA-Tribal law and order office. The latter, with six mobile units, operates on the same frequency as the Pima County Sheriff's Office radio system. The Indian Service administration system is a network of three remote stations in Sells and nineteen mobile units. In addition, there is a fixed monitor station at Santa Rosa.

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Papago Settlements. It is essential to the understanding of Papago settlement patterns and Papago social, economic and political life to reduce the confusion of Papago place name lists to a system of classification that underlines the differences that exist from one settlement to another.

At least five and perhaps six placename surveys have been conducted in this area since 1915. M. V. Clotts (1915), working for the Department of the Interior, located settlements of all types and took particular notice of the number of houses, the settlement economy, and the condition of the well in each settlement.

J. W. Hoover (1935) interviewed villagers to discover their origin. He published a map showing the "Generic Descent of Papago Villages". This study is important because it places settlements, which are no longer important, in their historic roles in the ever-changing communities on the reservation.

Alden Jones (1944) made a survey to identify the ever-increasing number of new locations on the reservation. On the basis of his work, W. H. Coulson, draftsman for the Bureau of Indian Affairs, compiled and drew a reservation map indicating the location of settlements, roads, wells, charcos, dams, and telephone or power lines. No distinction was made, however, in the size or importance of the settlements. A large black dot merely indicated a ". . . village or community scattered over a mile or so."

Again the Bureau of Indian Affairs attempted to reduce the confusion by securing the approval of the National Board of Geographic Names for a list of designations approved by the Papago Tribe, (Papago Place Names, 1957). Highway maps commonly use these "official" names and we have maintained this tradition. 103 361 127

Confusion in place names, however, is likely to continue. Anglos constantly refer to Quijotoa as Covered Wells, Gu Vo as Kerwo and Wahak Hotonok as San Simon or Tracy's. Indians, among themselves, sometimes have names for villages which are seldom heard and never used by Anglos. Sells, for example, is most commonly referred to as /Wah'osidcke/ or /Komkeoh-ethe-e-Wah'osidcke/ (turtle-caught-in-a-crack). Nevertheless, interviews with 32 Indian informants disclosed that official names are usually the ones used by Papagos with, of course, the Papago pronunciation. Exceptions, in addition to Sells, are Jewake for Quijotoa, Feije Meke for Santa Rosa, San Simon for Wahak Hotonok and Wak for San Xavior. 103 [115]

Villages. The Bureau of Ethnic Research at the University of Arizona, in connection with various studies, has compiled an exhaustive list of Papago place names. In total, 173 separate names were listed, but only 149 have been positively identified and accounted for as separate and distinct locations. From this list of 149 locations, 45 settlements were considered by Delmos Jones (1962) to be villages. 103 361

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621 Further research, however, has reduced this number of villages to 37, with nine of these classified as major villages, under the definitions given below.

> Village: A village represents community life. It is a settlement of five or more separate family co-residence units whose members frequently meet. A village has a church, a feast house or a school, and is visited regularly by outside service personnel. Members of villages live in the location for at least six months of the year. At times, therefore, a village may be vacant.
>
> Major Village: A major village, by definition, may never be vacant. At least twenty separate family co-residence groups live at such a settlement longer than six months of the year. In addition, a major village is visited by a variety of service personnel including priests, peddlers, agency workers and Public Health employees.

Papago villages and major villages (indicated by **) are listed below:

Baboquivari

Ali Chukson ** (With Ali Monila and Artesa)
Komelik
Supai Oidak (Cold Fields)
Topawa **

Chukut Kuk

San Miguel
Vamori

Gu Achi

Ko Vaya
Quijotoa ** (With Covered Wells and Maish Vaya)
San Serafin (Gu Achi)
Santa Rosa **

Gu Vo

Ali Chuk (Menager's Dam)
Gu Vo ** (Kerwo)

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361
·621

Hickiwan

Hickiwan (With Stoa Pitk)
Hotason Vo (Charco 27)
Kaka
Schuchuli (Gunsight)
Vaya Chin
Ventana

Pisinimo

Pisinimo **
Santa Cruz
Wahak Hotonok (San Simon or Tracy's)

Sells

Cowlic
Gu Oidak ** (Big Fields)
Nolia (Nolic)
San Luis
Sells **

Schuk Toak

Chiawuli Tak (Presnal Village)
Havana Nakya (Crow Hangs)
Pan Tak (Coyote Sits)
Sil Nakya (Saddle Hangs)
Viopuli (San Pedro)

Sif Oidak

Anegam
Chuichu **
Gu Komelik
Kohatk
Viava Vo

621
[368]
[366]

Reservation Centers. Sells and Santa Rosa are by far the most important villages. Located at Sells is the tribal government, agency offices and supply buildings of the Bureau of Indian Affairs, and a Public Health Service hospital, along with seven commercial establishments. It is the Papago "capital", the center of all tribal political activities and a great deal of the economic activities

621 on the reservation. Indian residents of Sells on the whole,
[20] seem to be well aware of events occurring beyond the borders
of the reservation.

Surprisingly, there is no real community organi-
[166] zation. This is probably due to the cosmopolitan nature
of Sells with residents having moved there from all parts
[571] of the reservation. The organizations which do exist re-
volve around voluntary associations, churches and cliques.

Residents of Sells have garden plots and some are
[434] [463] cattle growers, but their main source of income is from salar-
[464] ies and wages, with the majority working for the Bureau of
Indian Affairs, the Public Health Service, and the Papago
Tribe.

Santa Rosa is not as large as Sells, nor does it
[368] have many of its characteristics. There is a community
building, a government school, a government health center,
a church, and a trading post with gasoline pumps. The
community building is used for meetings which are held
to plan ceremonies and various village projects. There
[575] are also many voluntary associations, all patterned after
similar Anglo associations, such as a Woman's Club, an
Athletic Club, and a Boy Scout troop.

[634] The Gu Achi District Council meets in the commun-
ity building and all political activity of the district is
[178] centered here. Santa Rosa, however, in spite of progressive
tendencies, contains some of the most traditional elements
of Papago culture found on the Reservation.

In an earlier day, reservation residence required 178
an adjustment to a desert environment. This being the case, 361
towns were always near a source of water and near acceptable 433
pasture and flood water farm land. At the present time, [464]
with wage work becoming increasingly important, in fact
essential to the great majority of Indians during some
period of the year, residence near a source of wage work
is also important.

Another change in Papago life has also been noted. 178
As recently as thirty or forty years ago community needs 621
were simple and most Papago villages were self-sufficient. 628
Today this is true only for Sells. Other villages look
elsewhere for one or another of the essential community
services: shopping, education, health services, religion,
government, and the like. These needs are met in a slightly
different fashion in each of the nine districts.

Baboquivari District. Although the districts -- as 634
political subdivisions of the main reservation -- were estab- 621
lished in 1937, long after the founding of most villages, 628
certain internal district relationships have been built 368
through time which are now important. In Baboquivari dis- [666]
trict Topawa serves as the voting place in tribal and dis-
trict elections. It is also the center for the education [797]
of Catholic youngsters, and is the ceremonial center for [796]
Catholic activities throughout the reservation. Native
ceremonial activities and traditional folk medicine centers

634 Ceremonial activities and Traditional folk medicine Native Centers
621 around Supai Oidak (Cold Fields), probably the most internall
628 cohesive village in the district. The outside orientation of
368 villagers in this district is towards Sells. The southern-
[178] most village in the district, Choulic, contains three or fou
families who are oriented toward activities in San Miguel of
Chukut Kuk district.

Chukut Kuk District. This district shares its southern border with Mexico and traditionally the orientatio of its villagers has been in that direction. Today, however, they join with villagers in Baboquivari District in sending their children either to Sells to the public school, or to Topawa to the Catholic Mission School. Villagers vote in
[166] Vamori and shop in Sells or Tucson. Many of the villagers in San Miguel, Vamori and the settlement of Tecolote have temporary homes in these villages and thus spend most of their time living in Sells where they work for wages. Oftentimes the "temporary" residence in Sells is in fact the "permanent" one.

Gu Achi District. Santa Rosa is the dominant town and provides medical and commerical services to residents throughout the area. It is also the seat of political activity of the district.

[illegible] Vo District. People in this district send their
[366] children to Gu Vo school. They commonly do their shopping in one of three places, either in Pisinimo, at the "Y" Store near Ajo, or in Ajo proper. Almost twenty per cent of the

Almost Twenty Per cent of The 634
wage work carried on by men of Gu Vo is in the mines of Ajo. 621
Medical services are sought in Sells or Ajo. Folk medicine 628
is sought in the village of Ali Chuk (Menager's Dam). This 368
village also has a reputation throughout the district as [464]
being a ceremonial center. Ali Chuk, with its irrigation, is [316]
quite autonomous and is oriented toward Mexicc. Priests,
residing in Pisinimo, make regular visits to both Gu Vo and
Ali Chuk villages.

Hickiwan District. The villagers of Kaka, Ventana and Vaya Chin commonly associate. (They have the only cattle association in the district). Vaya Chin contains a BIA school wher children from throughout the district attend. [365]
People at "this end" use the telephones in either Ventana [366]
(at Joe Thomas' house) or at the BIA school. They frequently shop, however, at the general store in Santa Rosa. Medical needs are cared for also at Santa Rosa clinic or by the medicine man in Vaya Chin.

The villagers of Hotason Vo (Charco #27), and Schuchuli (Gunsight) participate in political and ceremonial activities with Hickiwan. They commonly go to Covered Wells or to the "Y" near Ajo to shop.

Pisinimo District. Villagers of this district have a great many of the educational, political and commercial needs taken care of by the village of Pisinimo itself. [366]
The trader at San Simon (Wahak Hotonok) provides a "pick-up" store for district residents who work in Sells. Pisinimo has

634 a store, a school, and a resident priest. In addition it
621 is the voting place for the district.

628 Schuk Toak District. Here there is no dominant
368 village. People living in Sil Nakya (Saddle Hanging) send their children to Santa Rosa Ranch (Schuchk) or to Sells to school. They have their fields, however, outside the distric at Gu Achi. They also have close relatives living at Comobab during the colder seasons. Comobabi is vacent part of the year. One family in Sil Nakya gets a regular income from wag work done at Kitt Peak. People here commonly go to Sells for medical services, but two medicine men take care of those whe want more traditional services. Havana Nakya (Crow Hanging) and Santa Rosa Ranch (Schuchk) are closely associated. Perhaps the foremost medicine man on the reservation lives in Havana Nakya. People in this district shop in Sells; their political center as well as their educational center is Santa Rosa Ranch (Schuchk) -- a non-village location. San Pedro (Viopuli) and Pan Tak (Coyote Sits) have trophies from the same medicine basket. People in the two villages are closely related and they cooperate during fiestas. Chiawuli Tak (Fresnal Village), however, is quite by itself. It seems to be a "bedroom community" for people who work at Sells, yet one section of Fresnal Village is very traditional in respect to subsistence farming, beliefs, and house type.

In summary, Schuk Toak district is represented by relatively autonomous settlements. Those near the Tucson-Sells highway (San Pedro,

Pan Tak, Havana Nakya and Chiawuli Tak and Schuchk) go else- 634
where for wage work, mostly to Kitt Peak and Sells. Those 621
villages away from the highway in the mountains (Sil Nakya, 628
Comobabi) maintain the old pattern of cattle raising and 368
subsistence farming and are oriented toward Santa Rosa.

Sells District. This district has not been studied carefully, but it would not be inaccurate to say that Sells dominates every other location in providing major services, except that of native ceremonialism at Gu Oidak (Big Fields). Catholic children go to Topawa to school; Protestants go to the Public School in Sells.

Sif Oidak District. This district seems to be [166]
losing many of its residents. A recent visit to Kohatk (August, 1963) revealed many houses in disrepair and abandoned. Only six families were still living there. Chuichu also, with the closing of the school several years ago, has lost some of its importance and population. Anegam is the political seat of the district and perhaps the most "traditional".

Non-Village Settlements. Under another definition, 621
perhaps eight additional settlements on the Papago Reserva- 361
tion would be classified as villages. They are listed and described below.

Choulic (Baboquivari District). This village has no public building at all. It is spread over an area of some two-and-a-half miles, thus people nearest San Miguel orient

621 themselves to that village. At the most, there are ten co-
361 resident groups but information revealed in interviews shows
us that seldom, if ever, do these ten groups identify with
each other as separate and distinct from San Miguel or any
other village mentioned.

Chukut Kuk (Tecolote)(Chukut Kuk District). This settlement too has no public building. There were only three co-resident groups living here and each had an outside orientation to either Sells or Ajo.

Pia Oik (Gu Vo District). This settlement had but three co-resident groups at the time of observation and but two abandoned houses to receive any more residents. There is a church, but it is in the fenced compound of Lewis Manuel and is more a family church than a community one. No priest visits this location regularly.

Chuwut Murk (Pisinimo District). This settlement
[166] is barely accessible in August. Informants report that
everyone moves to Pisinimo during the school year so that
their children may attend. There is a church, but no priest
visits it regularly.

Comobabi and Schuchk (Schuk Toak District).
[592] Comobabi has only one household of permanent residents, two
[166] old spinsters. There are, however, fifteen houses here in
good condition and at least six to eight of these are inhabited
seasonally. This village is best classified as seasonally
"vacant".

Schuchk contains but three permanent co-resident 621
groups. There are no churches. During the school year the 361
cook and maintenance man live here. There is a telephone [365]
for general use of the district, and, there is a permanently [162]
residing pair of Anglo families. Thus, with its phone, its school, its central location for the district council, Schuchk may be classified as a service center but not a village.

Tat Komoli (Jackrabbit) and Shopishk (Sif Cidak District). According to two informants living in Gu Komelik, Tat Momoli contains but three families. There is a church, but no feast house. The entry road is in very poor condition and the Catholic priest seldom visits the village.

Only two people live in Shopishk according to one informant. There is no church and few people visit this
place. Nevertheless, a woman lives here who is somewhat [323]
famous for her pottery.

In addition to the above settlements, there are 361
about 100 locations which are occupied either permanently 221
or temporarily for a wide variety of purposes. In most [233]
instances, they are used by people engaged in stock raising, [241]
or in a combination of stock raising and farming who must live more or less permanently near their holdings. It must be recalled that the main Papago Reservation is an area of 4,328 square miles with relatively few miles of improved roads. Some other localities are used temporarily or

361 Some other localities are used Temporarily or
221 seasonally as cattle and farm camps and others are used
[222] during the season of saguaro fruit harvest. It has been
noted that in some instances scattered settlements are also
used as "vacation" homes.

161 **The Papago Population**. The aspect of the Papago
population most important to this study is its small size,
[162] relative to the large area it occupies. It is scattered
over the entire Reservation in small villages, none of more
than two or three hundred people with the exception of Sells,
[433] the largest town, where about 650 reside (Table 5). Never-
[182] theless, because the resources of the region are limited,
the relatively small population is supported only inade-
quately, and its exact size is of importance in evaluating
the relationships between the people and their resources.

[162] According to the count completed by the Bureau of Ethnic Research for the year 1959, which will be reported on in detail below, the total population of the main reservation was 4,166, with 628 additional Papagos on the San Xavier and Gila Bend reservations and 6,981 living elsewhere or with residence unknown, for a total living Papago population of 11,775.

The main reservation population of 4,166 compares with a total of 5,313 Papagos located on the reservation in 1914, according to a count made by Herbert V. Clotts (Clotts 1915). It must be assumed that there were relatively few Papagos off the main reservation in 1914 and that the difference between 5,313 and the 1959 population 161 of 11,775 represents an absolute increase in population. This is approximately two per cent a year, well within normal expectation. The important point is that the Papago [167] have not attempted to maintain an increasing population on the same land base but are moving off the reservation at a rate about equal to, or exceeding, the rate of natural increase.

The Clotte survey contains other interesting data 162 621 on Papago settlements. Clotts listed, in his description of settlements, wells, fields, and so on, the population of 52 locations (see Map 5). Of these only 19 had a population of 100 or more, the largest being Topawa (500), Santa Rosa (400), San Miguel (325), Gu Oidak (Big Fields) (250), and Anegam (200). The care with which Clotts ap- [127] pears to have made his estimates, and his systematic recording of many details at each location visited, justifies the placing of considerable confidence in these estimates.

A comparison of populations by district on the 162 634 main reservation is given in Table 3.

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Table 3. Papago Population by Districts 1914 and 1959

District	1914 (Clotts)	1959 (BER)
Baboquivari	949	562
Chukut Kuk	512	214
Gu Achi	695	531
Gu Vo	200	230
Hickiwan	222	346
Pisinimo	396	330
Schuk Toak	565	370
Sells	659	1,026
Sif Oidak	1,115	552
Total	5,313	4,161

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[101]

The Present Population. The information which follows is derived from a Papago population register secured by the Bureau of Ethnic Research in 1958 and 1959 in connection with a research project sponsored and in major part financed by the Biometry Branch of the National Cancer Institute. The work was under the direction of Dr. Robert A. Hackenberg and cooperating agencies were the Papago Tribe, the Division of Indian Health of the Public Health Service, the Bureau of Indian Affairs, and the Arizona State Office of Vital Statistics.

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A population register is not a census. It is intended to serve as a permanent record of identifiable

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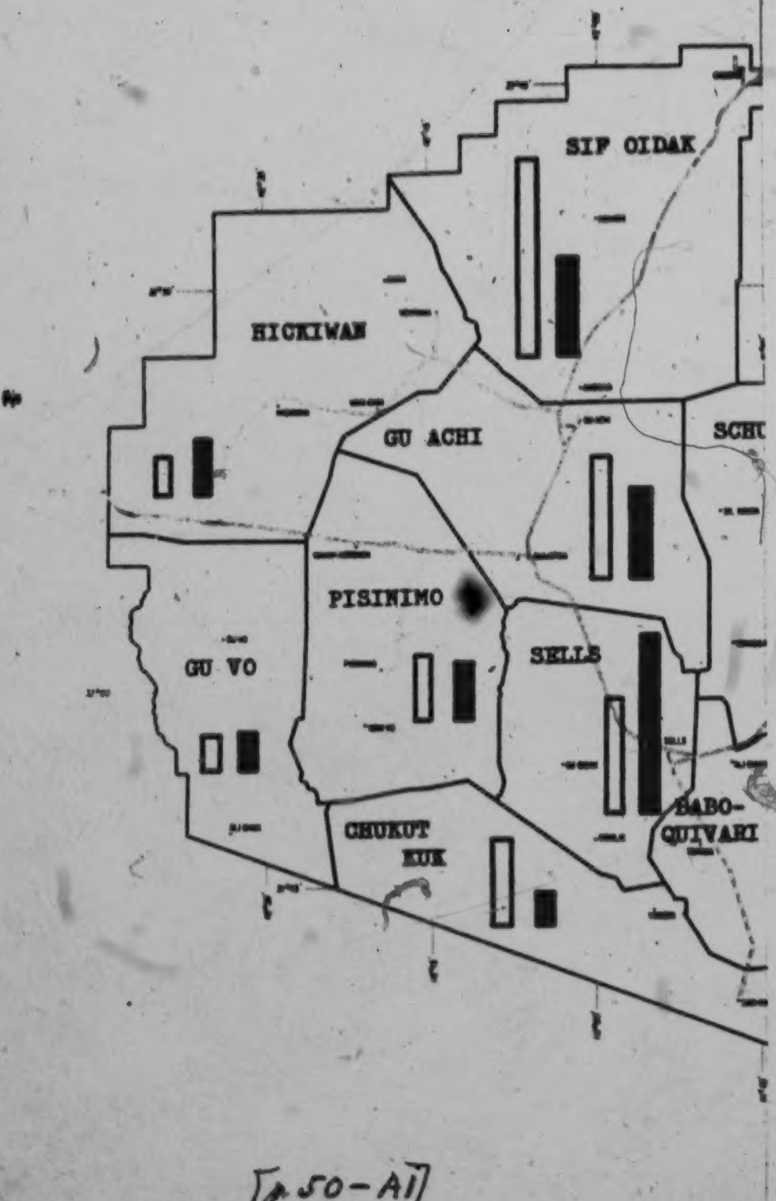
SIF OIDAK
HICKIWAN
GU ACHI
SCHU
PISINIMO
GU VO
SELLS
CHUKUT KUK
BABO-QUIVARI

[p 50-A1]

18: Kelly E-4, 5 (no date) 1963 NU28 Papago NU28

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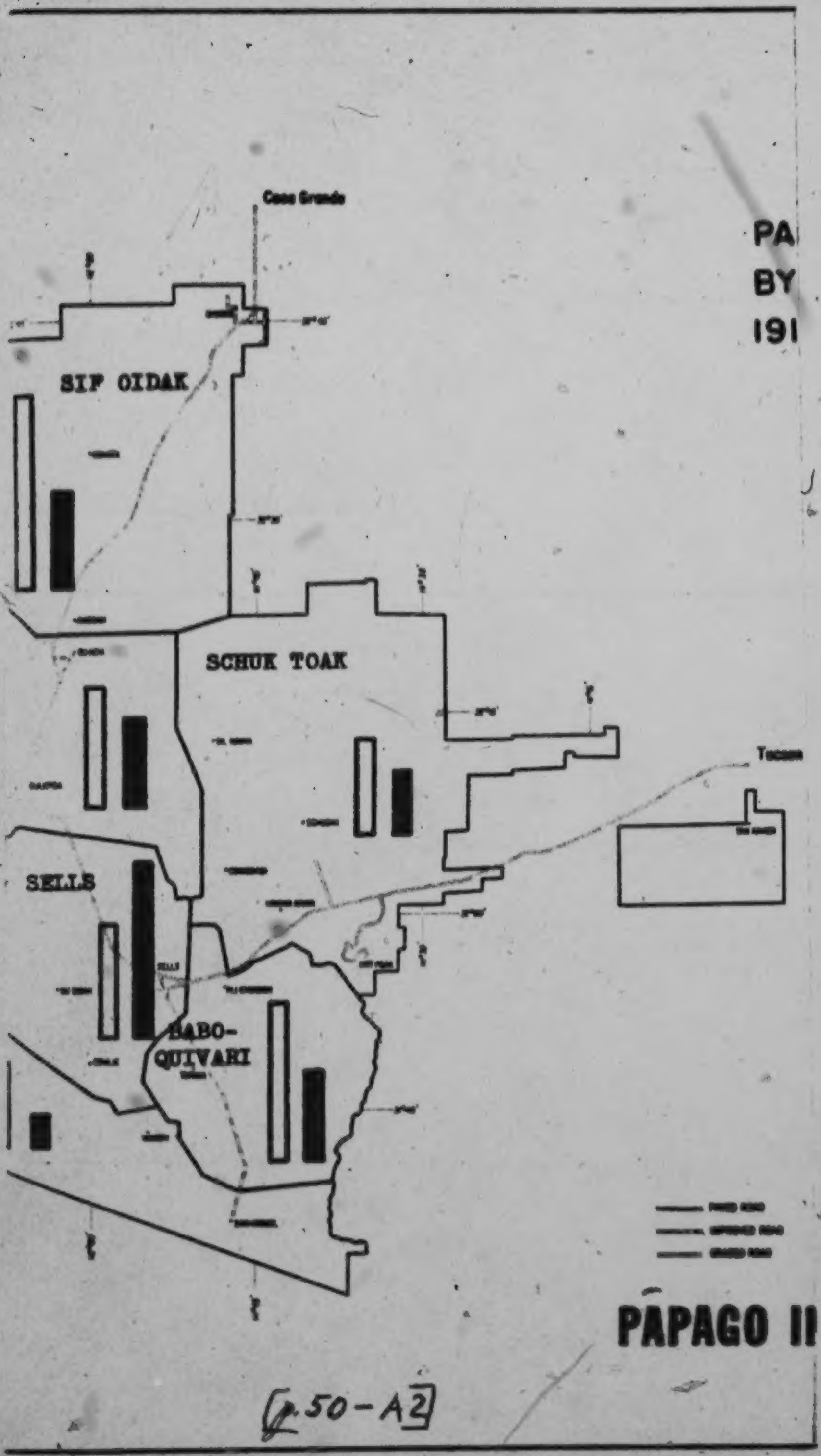
Casa Grande
PA
BY
191
SIF OIDAK
SCHUK TOAK
Tucson
SELLS
BABO-
QUIVARI
PAPAGO II

p.50-A2

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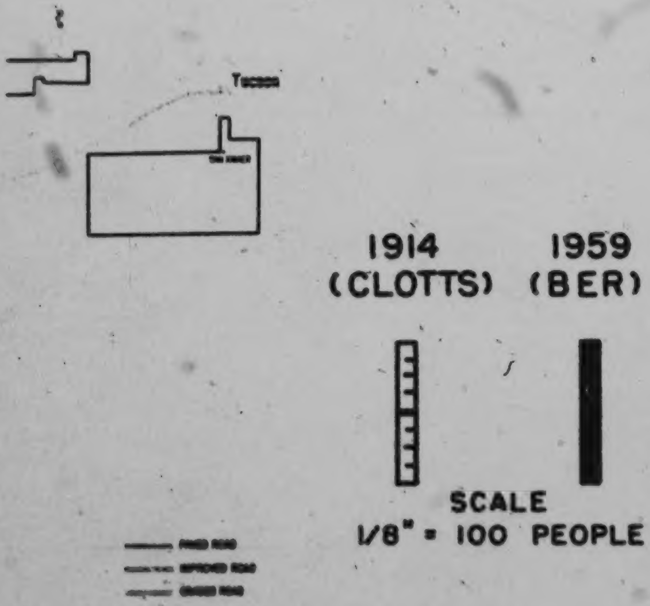
MAP 5
PAPAGO POPULATION BY DISTRICTS 1914 AND 1959


Tucson
1914 (CLOTTS)
1959 (BER)
SCALE
1/8" = 100 PEOPLE
PAVED ROAD
IMPROVED ROAD
GRADED ROAD

PAPAGO INDIAN RESERVATION

1963

R-50-A3

members of a distinctive group -- in this case the Papago -- 127
and, except for its non-legal status, amounts to a tribal 121
roll. Although of potential value to tribal and federal
administrators, the Papago population register is primarily
a research tool. It is a "universe" of individuals who are
the descendants of members of the Papago tribe in pre-reservation days. It is not confined, therefore, to the
present residents of the Papago reservations, but includes
identifiable Papagos wherever they may be living. A great
deal of information can be secured from the register as it
now stands, and changes in the register which will take
place as it is maintained through time will provide additional data for analysis. Of even greater importance will
be its use as a total population record from which samples
may be drawn for a wide variety of social, economic, and
health studies. It was, of course, an interest in studies
of Indian health that led the National Cancer Institute to
support the preparation of a Papago population register.

Methods and techniques used in the preparation 127
of the register, together with full reports on the data [125]
secured, have been and will be published by Dr. Robert A.
Hackenberg (1961). The problem of the reliability of the [128]
data, however, should be mentioned here.

No test has been conducted to determine the ex- 127
tent of over enumeration, under enumeration, or false 128
enumeration. This will be done in the near future. Field

127 work was pursued until the enumeration of new people became
128 so infrequent as to not justify additional expenditures.
Records were searched until new data became so scanty or so difficult to handle, that additional work could not be justified.

127 Because we were seeking to secure data on all
125 living Papagos, no matter where they lived, we could not use the relatively simple method of house-to-house enumeration perfected by the United States Census Office. We were forced, instead, to identify individuals in a kinship context and to interview informants to secure names, whereabouts, and other facts pertaining to members of kinship groups.

For this reason, and because we could not rely upon name, date of birth, sex and residence as fully reliable identifying criteria, our interviews were long, tedious and
127 complicated. Reliability, we know, diminished in our
128 reservation interview material as a direct function of the number of years an individual had been gone from the reservation. Data is weakest for Papagos resident outside of Arizona. Through the cooperation of the Arizona State Office of Vital Statistics, we were able to process Papago birth and death certificates originating in Arizona. We could not secure such information from other states where Papagos are not identified except as "Indian".

Data from records was available for only about two 127
thirds of the individuals emmerated. Such data as kinship, 125
present residence, village of origin, employment, and the
educational level of adults, was secured entirely from field
interviews.

A census defines the individuals to be emmerated 127
in terms of their geographical location. A population regis- 121
ter defines individuals on the basis of their membership in
a specific group. One of our first tasks, therefore, was to 101
define a Papago. The definition used by Dr. Hackenberg 128
(1961) is given below. It can be made operational because we
have records of the individual builders of dwellings on the
three Papago reservations*, and because we have lineage data
which give us the network of Papago kin ties.

1. A person will be considered a Papago Indian if he constructed a house within the limits of the Papago Reservations (Sells, San Xavier and Gila Bend), unless he fails to meet the terms of #3 below.
2. A person will be considered a Papago Indian if he is either a lineal or collateral relative of such a housebuilder unless he fails to meet the terms of #3 below.

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* Papagos do not live on the Gila Bend Reservation. Papagos living adjacent to the Reservation, however, are traditionally considered "reservation Papagos".

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3. No person will be considered a Papago Indian if he did not have at least one grand-parent considered to be a full-blood Papago Indian by other Indians in his community.

The strict limits of this definition, however, have not been adhered to in this report. For total population figures we are counting all individuals of any degree of Papago ancestry, and we are counting individuals who, as yet, have not been linked by kinship to reservation house-builders. In Chapter IV we shall limit our discussion to a somewhat smaller group of Papagos to be defined as the "administrative population".

162
[161] The total living Papago population, according to our count, is 11,775: 5,816 male and 5,959 female. As everyone has long suspected, about half of the Papagos live in non-reservation communities, mostly in Arizona. The exact percentage is 47% but we have every reason to believe that almost all of the individuals for whom we have no residence are living off reservations. By adding this group of 531 individuals to the off reservation population, the percentage climbs to 49%.

The total living Papago population, by sex and residence, is as follows:

Table 4. Residence of the Total Papago Population by Sex.

162

Residence	Total	Percent	Male	Female
On Papago Reservations	4,794	43%	2,396	2,398
On Other Reservations	1,201	11%	609	591
Off Reservation	5,249	47%	2,540	2,710
Total	11,244		5,545	5,699
Unknown Residence	531		271	260
Total, Irrespective of Residence	11,775		5,816	5,959

We have not, of course, enumerated all living Papago Indians and we will not be able to make an estimate of under enumeration until a test is made. It is our guess that our error is in the neighborhood of 5%. Much more difficult will be an attempt to estimate an error of over enumeration which traces to the difficulty of securing records of deceased Indians thus causing us to carry as living many individuals who are deceased. This could cancel out the under enumeration mentioned above. 128

The count is for the year 1959. A conservative estimate of annual population increase would be two percent. On this basis we estimate that there are now 12,745 living individuals of some degree of Papago ancestry. 161

The distribution of the 4,794 individual Papagos whose usual home is on the Sells, San Xavier, and Gila Bend reservations is as follows: 162

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Table 5. Residence of The Reservation Population by Sex

Residence	Total Number	Total %	Male	Female
ON RESERVATION				
Total	4,789**		2391	2398
Baboquivari	562	11.74	292	270
Ali Chukson	153		84	69
Komelik	47		20	27
Supi Oidak	31		18	13
Topawa	224		115	109
Other Places	107		55	52
Chukut Kuk	214	4.50	114	100
San Miguel	76		46	30
Vamori	65		38	27
Other Places	73		30	43
Gu Achi	531	11.09	245	286
Gu Achi	264		116	148
Ko Vaya	52		23	29
Quijotoa	50		13	37
San Serafin	32		15	17
Other Places	133		78	55
Gu Vo	230	4.80	129	101
Gu Vo	135		79	56
Ali Chuk	80		38	42
Other Places	15		12	3
Hickiwan	346	7.22	179	167
Hickiwan	127		74	53
Hotason Vo	39		18	21
Kaka	65		28	37
Schuchuli	29		12	17
Vaya Chin	12		5	7
Ventana	58		34	24
Other Places	16		8	8

(Table 5 Continued)

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Residence	Total		Male	Female
	Number	%		
Pisinimo	330	6.89	150	180
Kom Vo	52		23	29
Pisinimo	136		59	77
Tahak Hotonok	56		25	31
Other Places	86		43	43
Schuk Toak	370	7.73	187	183
Chiawuli Tak	56		27	29
Comobabi	99		55	44
Havana Nakya	64		35	29
Pan Tak	56		19	37
Schuchk	13		8	5
Sil Nakya	51		27	24
Viopuli	25		13	12
Other Places	6		3	3
Sells	1,026	21.42	503	523
Cowlic	91		43	48
Gu Oidak	213		111	102
Sells	657		315	342
Other Places	65		34	31
Sif Oidak	552	11.52	286	266
Anegam	157		83	74
Chuichu	227		116	111
Gu Komelik	14		7	7
Kohatk	50		26	24
Viava Vo	66		32	34
Other Places	38		22	16
San Xavier	454	9.48	235	219
Gila Bend	174	3.63	71	103

** Five individuals in the earlier count have been removed.

162 **Age Distribution.** The median age of a person of Papago descent is between 19 and 20 years. The median age of the rural population of the United States is 27.6. There is no doubt that this is a young population and that the age distribution is comparable to populations where living conditions are difficult, where modern sanitation practices are not adhered to, and where the application of modern medicine is not yet reflected in population figures.

162 A comparison of age groups with the United States
171 rural population in 1956 is given below.

Table 6. Total Papago Population by Age Groups Compared with Rural America

Age Group	Papago Number	Papago Percent	Rural America Percent
Under 5 years	1671	14.65	12.39
5 to 9 years	1598	14.01	11.98
10 to 14 years	1335	11.70	9.57
15 to 19 years	1158	10.15	7.32
20 to 24 years	993	8.70	5.10
25 to 34 years	1624	14.24	13.26
35 to 44 years	1156	10.13	13.22
45 to 54 years	891	7.81	10.59
55 to 64 years	512	4.48	7.97
65 and over	466	4.08	8.56
Total	11,404		
Age not known	371		

144 **Race Composition.** An examination of our statistics
162 on the age and residence of Papagos of mixed ancestry (whether the mixture is with non-Indians or with members of other Indian tribes) reveals that mixed-blood Papagos and marriages of Papagos with non-Papagos have been increasing in frequency and that, as would be expected, mixed marriages are most common among Papagos living off the reservation. (Table 7)

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Table 7. Racial Composition of the Total Papago Population by Age and Residence

	ON RESERVATION					OFF RESERVATION				
Age Group	Total	Full Blood Number	%	Mixed Blood Number	%	Total	Full Blood Number	%	Mixed Blood Number	%
Under 5	569	479	84	90	16	1004	518	52	486	48
5 to 9	631	534	85	97	15	916	493	54	423	46
10 to 14	578	517	89	61	11	737	410	56	327	44
15 to 19	437	399	91	38	9	691	396	57	295	43
20 to 24	348	329	95	19	5	613	410	67	203	33
25 to 34	585	555	95	30	5	989	733	74	256	26
35 to 44	493	471	96	22	4	642	529	82	113	18
45 to 54	445	429	96	16	4	427	334	78	93	22
55 to 64	302	295	98	7	2	190	166	87	24	13
65 & over	343	340	99	3	1	106	98	92	8	8
Total	4794	4408	92	386	8	6453	4171	65	2282	35
Age not Known	63	60		3		138	84		54	

Residence. As was noted above, 54% of all Papagos of known residence usually make their home on the three Papago reservations or on other Arizona reservations. The count, however, must be taken with some caution since our informants could not be expected to give uniform answers to the question respecting "usual present residence". The majority of reservation residents move off the reservation

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162 for widely varying lengths of time so that, in many cases, 167 it would be difficult to say whether the "usual" residence 128 was off the reservation or on the reservation. Assigning residence on the basis of the location of a family at the time of our interviews would have resulted in even more misleading figures since the number counted, as in the case of the United States census, would depend upon the season of the year when the interviews took place.

It is, of course, quite risky to interpret the statistics on residence by age and sex. No doubt a great [561] many factors enter. Adults in the age bracket 20 to 44 are more apt to be living off the reservation than individuals in other age groups. This could result from two factors: Younger adults of this generation are more inclined to seek work in off-reservation communities, and older adults of this generation are inclined to return to the reservation as they grow older. Among children, the small differences in residence are probably traceable to the Papago desire to place school age children with relatives on the reservation when an off-reservation move is made.

Differences in residence by sex have not been tabulated for this report and are too small to have any meaning by age groups. Adult men and women move off the reservations in about equal numbers and it must be concluded that married couples, on the whole, move together when a move is made. The number of women exceeds the number of men in the

[Text continues on p. 62]

Table 8. Residence of t

Residence	Under 5 Years	5 to 9 Years	10 to 14 Years	15 to 19 Years
ON RESERVATION				
Total	736	841	754	583
Main Reservation	480	545	505	401
San Xavier	65	67	49	27
Gila Bend	24	19	24	9
Other Arizona Reservations	167	210	176	146
OFF RESERVATIONS				
Total	837	706	561	545
Arizona	744	601	483	442
U. S. Except Ariz.	80	81	53	64
Mexico	13	24	22	24
In Institutions	0	0	3	15
Total	1573	1547	1315	1128
Residence Unknown	98	51	20	30
Percent living off the reservation	53%	46%	43%	48%

[p. 61-sec. A]

18: Kelly E-4, 5 (no date) 1963 NU28 Papago NU28

162 3. Residence of the Total Papago Population by Age

to rs	10 to 14 Years	15 to 19 Years	20 to 24 Years	25 to 34 Years	35 to 44 Years	45 to 54 Years	55 to 64 Years	65 and Over
41	754	583	453	744	577	509	335	378
45	505	401	310	495	43	384	255	302
67	49	27	25	59	4	51	32	33
19	24	9	13	31	1	10	15	8
10	176	146	105	159	8	64	33	35
06	561	545	505	830	55	363	157	71
01	483	442	339	633	43	273	121	46
81	53	64	104	138	7	36	13	3
24	22	24	27	39	3	51	22	16
0	3	15	35	20	1	3	1	6
47	1315	1128	958	157	113	872	492	449
51	20	30	35	[illegible]0	2	19	20	17
6%	43%	48%	53%	53%	49	42%	32%	16%

[p. 61 - sec. B]

162.

lation by Age

45 to 54 Years	55 to 64 Years	65 and Over	Total	Age Not Known	Total
509	335	378	5910	85	5995
384	255	302	4112	54	4166
51	32	33	452	2	454
10	15	8	167	7	174
64	33	35	1179	22	1201
363	157	71	5133	116	5249
273	121	46	4116	62	4178
36	13	3	651	13	664
51	22	16	273	41	314
3	1	6	93	0	93
872	492	449	11043	201	11244
19	20	17	361	170	531
42%	32%	16%		58%	47%

[p.61-sec. C]

age bracket 20 to 44 by about two percent and the number of women in the same age bracket, living on the reservation, exceeds the number of men by about the same proportion. 162 167 128

Origin. In order to secure some measure of Papago population mobility, an attempt was made to secure the place of birth or, for older people, the place in which they lived as children. For our total population of 11,775 we have data on age and place of origin for 10,795. The comparable figure for known age and residence is 11,043. Whereas 46% of people with known residence live off the reservations, only 24% of people with known origin originated off the reservation. The shift toward increasing numbers of Papagos with off-reservation origin occurs rather evenly from among the oldest people, with seven percent originating off the reservation to the youngest people with 44% originating off the reservation. Another way of indicating the same trend is to say that 16% of Papagos over the age of 65 live off the reservations and 7% originated there, whereas 53% of Papagos under the age of five live off the reservations and 44% originated there. In between, 53% of Papagos between ages 20 and 24 live off the reservations and 18% originated there. [178]

Table 9. Origin o

Residence	Under 5 Years	5 to 9 Years	10 to 14 Years	15 t 19 Year
ON RESERVATION				
Total	852	981	945	833
Main Reservation	583	658	660	623
San Xavier	73	84	69	41
Gila Bend	24	23	25	9
Other Reservations	172	216	191	160
OFF RESERVATION				
Total	682	538	351	278
Arizona Non-Reservation	626	479	313	233
U. S. Except Ariz.	40	32	11	7
Mexico	16	27	27	38
Total	1534	1519	1296	1111
Origin Unknown	137	79	39	47
Percent Originating Off Reservations	44%	35%	27%	25%

[p.63 - sec. A]

162 able 9. Origin of the Total Papago Population by Age

5 to 9 ears	10 to 14 Years	15 to 19 Years	20 to 24 Years	25 to 34 Years	35 to 44 Years	45 to 54 Years	55 to 64 Years	65 ar Ov
981	945	833	777	1289	966	739	415	3
658	660	623	587	998	815	623	350	3
84	69	41	44	92	65	45	32	
23	25	9	17	35	13	12	14	
216	191	160	129	164	73	59	19	
538	351	278	170	257	133	106	54	
479	313	233	131	158	51	23	5	
32	11	7	4	9	6	1	0	
27	27	38	35	90	76	82	49	
519	1296	1111	947	1546	1099	845	469	4
79	39	47	46	78	57	46	43	
35%	27%	25%	18%	17%	12%	13%	12%	

[p. 63 – sec. B]

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2 Population by Age

35 to 44 Years	45 to 54 Years	55 to 64 Years	65 and Over	Total	Age Not Known	Total
966	739	415	398	8195	68	8263
815	623	350	341	6238	48	6286
65	45	32	29	574	2	576
13	12	14	8	180	10	190
73	59	19	20	1203	8	1211
133	106	54	31	2600	72	2672
51	23	5	5	2024	30	2054
6	1	0	0	110	7	117
76	82	49	26	466	35	501
1099	845	469	429	10795	140	10935
57	46	43	37	609	231	840
12%	13%	12%	7%		51%	24%

[p.63-sec.C]

Population Conclusions. Two very clear trends are 162 178
indicated in our analysis of the total Papago population:
(1) Papagos have been moving off the reservation in ever [167]
increasing numbers during the lifetime of the present popula- [582]
tion and (2) contact with the outside world has accelerated
the intermarriage of Papagos with non-Papagos. Data, not
here reported, shows that the majority of these marriages
are between Papagos and members of other Indian tribes.

In addition to the more or less permanent residence [221]
shift indicated above, data to be presented in Chapter IV
will show a high rate of seasonal and temporary movement off
the reservation.

In his preliminary report on the Papago Population, 114
prepared in 1961, Dr. Robert A. Hackenberg prepared an analysis [178]
respecting the transitional position of the Papago midway
between reliance upon the institutions of native society and
the acceptance of the alternatives provided by Federal programs and the opportunities in the surrounding non-Indian
off-reservation areas. The following analysis is from his
report and is in no material respect altered by the more
precise information gathered during the past two years.

Age Distribution. The significance of the age 162 171
distribution developed from the 1959 figures may be seen
through the comparisons made in the following table.

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Table 10. Age Proportions of "Primitive" and "Civilized" Groups

Age Group	Navajo	1959 Papago	Sweden
0- 4	17.1%	14.65%	9.1%
5-14	28.9	25.71	13.9
15-24	20.0	18.86	12.9
25-34	11.3	14.24	15.6
35-44	8.2	10.13	15.5
45-54	5.9	7.81	13.0
55-64	3.6	4.48	10.0
65+	4.2	4.08	10.1

The columns show the differing proportions of "primitive" and "civilized" populations which appear in the various age classes. The basic variable is life expectancy. In populations such as the Navajo, with short life-span, there is a tendency for a large proportion of the total group to be concentrated in the lower age ranges. In Western European civilization, where nations have the world's longest life expectancies, the population when grouped by age, tends to distribute equally across all categories. 162 165 171

162 171 The transitional nature of the Papago population is illustrated by comparison of proportions of all three populations under 25 years of age. The Navajo proportion is 66%, the Papago is 59%, and the Swedish, 36%. The table above shows the Papago proportion in each age class to fall between the extremes represented by Sweden and Navajo.

144 162 Race Composition. The trend in favor of greater racial mixture at the younger age levels has already been noted. One out of every three Papago children born today has at least

one parent who is not a Papago fullblood. Thirty years ago 144 162
the proportion was one out of thirty or less.

Mixture at the present time is by no means sufficient to imply that biological assimilation of the Papagos is taking place, or is likely to occur. Papago outgroup 144 162 582
marriages has become a significant factor in the 35-55 year age group, however. This inference is warranted by the proportion of mixedblood children appearing in the birth through 25 year age classes. The visible effect of this mixture will be lessened by the preference pattern of Papagos for other Indians rather than non-Indians. Still, the accelerating rate of out-group marriage indicates the probability of profound behavioral changes within the next several generations of Papago family life.

Origin Composition. The first substantial propor- 162 161 178
tion of the Papago population to originate off the reservation (25%) appears in the 15-19 year age class. This proportion increases to 44% in the 0-4 class. These figures indicate that the majority of the Papago births are still occurring within reservation families, but the balance is shifting toward off-reservation origin. Projection of the present trend indicates a majority of Papagos will originate outside Papago reservation areas within the next twenty-five years. This projection is based on the observation that there has been an average 5% increase in the proportion of each successive age group born off the reservation in the past 25 years.

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Residence Composition. The thirty percent increase in off-reservation residence between the 65+ and 15-24 age categories is of obvious significance. The trend displayed is reversed in the five through 19 age classes, however. The interpretation of this reversal opens several possibilities, and a choice between them must await examination of further evidence.

If the birth rate of reservation families were considerably higher than that off the reservation, the reversal would be accounted for. It is more likely, however, that the excess population on the reservation in the five through 14 age range is related to school attendance and employment patterns. Many Papago off-reservation families, in which both husband and wife are employed, board children with relatives on the reservation. Many off-reservation families prefer to send their children to Indian schools rather than "integrated" schools, and board them with reservation relatives for this reason. Possible relationships between this residence pattern and better opportunity to receive Aid to Dependent Children benefits on the reservation should also be verified.

Regardless of the explanation, it appears likely that the members of this youthful population will move off the reservation in at least the same numbers as their older siblings have already done upon reaching marriage and employment age.

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Hackenberg's hypothesis that the Papago Indians represent a transitional population is in accord with these statements. No tendency toward stability was discovered in any of the characteristics of the total population examined in this survey.

The trends in residence, age composition and origin disclosed movement away from native institutions of Papago society. Since these characteristics must be considered as inter-related, the unanimity of their implications is not surprising.

The pattern of changing age composition, discussed at the beginning of the interpretation was indicative of what lay ahead. Alteration of the life expectancy of a primitive group can only be achieved through large-scale changes in living habits, movement to more sanitary shelters affording better protection from weather, improved employment opportunities, better education, and more frequent use of medical services.

CHAPTER III

RESERVATION ECONOMY

Stock Raising. From the point of view of natural 233 resources, the main Papago Reservation in its present state of development can be described in two words: cattle range. Approximately 15,000 head of cattle and horses are grazed on [434] the reservation producing an estimated annual gross income of $650,000.

The introduction of cattle to the Papago country 175 233 has been summarized in some detail by Wagoner (History of [114] the Cattle Industry in Southern Arizona, 1540-1940). He points out that Coronado's large herds of cattle and sheep, brought northward in 1540, were steadily reduced in numbers, and it is probable that none of those that escaped or were abandoned on the march survived as the basis for wild herds and flocks in the 16th and 17th Centuries. Nevertheless, before 1700 there were some 100,000 head of cattle in northern Sonora. How far north any of these herds drifted is not known.

The Papago livestock industry really begins with the systematic development of ranching by Father Kino in the 1690's and early 1700's, but numbers seem to have continued

175 small. Most cattle in the 18th and early 19th Centuries were
233 probably semi-wild and formed only a minor part of the subsistence base of the Papago.

175 Soon after the Gadsden Purchase of 1853 non-Indian
233 ranchers began moving into the area of the main reservation,
563 most of which, until 1917, was public domain. There are no accurate figures on the extent of non-Indian ranching during the years prior to 1917. Large ranches, however, were established in various areas of what is now the main reservation and these were later acquired by the federal government for the benefit of the Papago.

175 Cattle ranching by Indians was on a small scale
233 prior to the drilling of the first wells for stock water in
312 the early 1900's. There thus was added to the traditional
361 Papago well settlement (near an assured supply of water for the winter season) and the field settlement (near the floodwater fields used in the summer) a third recognizable type of settlement, the ranch. A. K. Mark has tabulated the number of identifiable Indian ranch locations between 1850 and 1960 (Mark, 1960, Tables 4 and 5). In 1900 there were six such locations. Another 14 were established by 1925, and another 12 by 1960. Because some were abandoned through the years, there were a total of 23 Papago ranch and grazing locations in 1960.

175 These data support the inference that livestock
233 raising began to have substantial economic significance for

the Papago soon after 1900. Unlike other Arizona tribes, 175
who acquired cattle in significant numbers only after formal 233
programs for cattle raising had been introduced by the Bureau
of Indian Affairs, the Papago created their own livestock
economy. Gwyneth Harrington provides a very interesting [114]
account of the process (Harrington, 1938). The incorporation 175
of cattle raising as a part of Papago native culture, compares 178
with the Navajo sheep raising economy, and accounts for a great 233
deal of the resistance to change on the part of both tribes:

> "In the time which elapsed between the abandonment of Father Kino's missions and the founding of the Papago Indian Reservation in 1917, the Papago had plenty of time, about two hundred years in all, to become accustomed to the use of cattle and horses, adjust themselves to the new occupational elements, and assimilate the industry into the family, social, and economic structure of the tribe at their own tempo, without interference.
>
> "The old hunting range became the cattle range of the Papago settlement. Hunting was not entirely abandoned, and still has some place in the Papago economy; but in the southern districts the economic emphasis shifted early to cattle raising. [224]
>
> "The cattle of all the family were herded together, and the enterprise was conducted under the orders of the family head. The family hunters, usually one or two men to a family, gave place to one or more of the younger men appointed by the patriarchal head of the family as cowboys. These men took care of the cattle, while, as often in the case of hunters, the others did their share of the farming, and provided for their other needs in return for the specialized work of hunting or care of cattle.
>
> "Each village chose a local stockman to direct the village round-ups and cattle sales. His work was voluntary, unpaid, and a position of some prestige, almost equal to that of the Hunt Chief, whose position was falling into disuse." [554] [463]

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233 The first detailed observations of Papago cattle raising were made by Clotts during his 1914-15 topographic survey of the Papagueria (Clotts, 1915). At each village he attempted to record such details as population, number of houses, acreage in cultivation, amount of livestock, and so on. He reports, however, that his figures on the number of cattle and horses are only estimates, based upon the number given at a few villages and by comparison with other places. He provides a district-by-district report and then gives an estimate for the entire reservation. The latter figure is from twice to three times the district totals.

Table 11. Numbers of Livestock Recorded by Clotts in 1914 at Locations now within the Papago Reservation

[634]

District	Cattle	Horses	Grazing Units*
Baboquivari	2,050	320	2,450
Chukut Kut	2,075	330	2,486
Gu Achi	1,570	270	1,856
Gu Vo	665	88	775
Hickiwan	900	155	1,094
Pisinimo	1,790	220	2,065
Schuk Toak	800	110	937
Sells	1,870	270	2,206
Sif Cidak	2,000	240	2,300
Totals	13,670	2,003	16,169

Having given this information, he then goes on to say that the number of cattle and horses held by the Papago was variously estimated at from 30,000 to 50,000 of the former and 8,000 to 10,000 of the latter. It is possible that the number of cattle sold annually from the reservation influenced Clotts in arriving at these latter estimates. As Gwyneth Harrington learned later, Papago have always been credited with running more cattle than they possessed because of the numbers sold from the reservation. She learned that Mexican cattle were habitually introduced into the United States through the Papago Reservation at market time by Mexican ranchers seeking higher prices for their stock.

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* Units are calculated on the basis of one unit for cattle and one and a quarter units for horses.

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Clotts' comments on stock raising as observed in 1914 are of sufficient interest to quote in full (Clotts, 1915, pp. 7-8):

> "Husbandry. These Indians own at the present time a very large number of cattle and horses. These are ranged in the valleys as long as the water lasts in the charcos, and are then driven to the mountains and watered at the wells, the water being raised by means of the simple combination of saddle pony, lariat, and rawhide bucket. The Indians are good horsemen and round up and branding time is an important event.
>
> "Grazing. A large number of cattle are sold annually to buyers from Tucson and other points. It is a fairly good cattle country, notwithstanding the lack of a sufficient number of watering places scattered throughout the country. It is variously estimated that there are from 30,000 to 50,000 cattle and 8,000 to 10,000 horses belonging to the Papagos. Among these is a good proportion of very good stock since the introduction a few years ago of a number of thoroughbreds.
>
> "Owing to the hot, dry months of May, June, and sometimes July, when the charcos go dry and the grazing around the mountain wells is reduced to

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> an irreducible minimum, cattle are brought to a state bordering on starvation. Sometimes quite a number die. It is at this time that the cattle can be seen eating the choya (cholla) with its protection of numberless spines which attach themselves to the mouth, nose and even ears and must be carried around until brushed off. The choya has considerable water and food value if it could be eaten."

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311 Clotts' figures not only indicate the intensity of development of stock raising, but, as shown on Map 7,[1] make clear its general distribution on the reservation. There is a conspicuous concentration along the Vamori and Santa Rosa washes, with very little development in the northeast and northwest areas. The map is based on the residence of owners, however, and thus does not show where the cattle are actually grazed. Vamori owners, for example, are known to have had large numbers of cattle in the foothills of the nearby Baboquivari Mountains.

Probably the only reliable estimate of the number of cattle held by the Papago prior to 1950 is given by Gwyneth [422] Harrington for 1937. In that year, with the help of Indian informants, she secured the number of cattle held by owners in each of the villages of the Baboquivari and Chukut Kuk districts. The total for Baboquivari was 5,100 head, and for Chukut Kuk, 5,880, making a total for the two districts of 10,980. Comparing these figures with estimates made by the Bureau of Indian Affairs for the other districts of the reservation she estimated that 44.9 per cent of all Papago

[1] [see map on p. 78-B1, B2 and B3 -- Analyst]

cattle were held in her two districts, and that the total cattle population on the reservation was about 25,000. 175 233 [311]

It is reasonable to assume from this and other evidence that the period of heavy grazing on the reservation was between 1914 and 1937. [731] Drought conditions in the middle 1930's caused many cattle and horses to die on the range and forced Indian owners to sell more than usual numbers. Cattle and horse sales, in fact, more than doubled between 1935 and 1939. 175 233 657 433 It was also during this time that the first serious attempts were made by the Bureau of Indian Affairs to introduce better range management practices and to influence the Indians to run fewer head of cattle of better quality. Pressure to reduce the number of horses, especially horses running wild on the reservation, also had an effect and, in addition, the number of horses was reduced because of a dourine infection which was not brought under control until the late 1940's.

The steady reduction in stock numbers was revealed in a ten-year comparison for the period 1949 to 1959 (Metzler, 1960, p. 55). 175 233 The data also provides information on the size of the Papago ranges and the number of acres available per animal unit. See Table 12.

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Table 12. Cattle and Horses Grazed on the Papago Reservations, 1949 and 1959, as Reported by the Bureau of Indian Affairs

Reservation and Year	Acres in Range	Total Animal Units	Acres Per Animal Unit
Sells			
1949	2,761,471	21,626	127
1959	2,755,686	17,487	158
San Xavier			
1949	69,232	899	77
1959	69,232	682	101
Gila Bend			
1949	10,172	235	43
1959	10,195	70	145
Totals			
1949	2,840,875	22,760	125
1959	2,835,113	18,239	155

175 233 311 [422] [312] The present distribution of cattle and horses on the reservation shows that livestock ownership is spread much more evenly over the reservation than formerly. A probable explanation for this modified distribution is the far larger number of wells now available, permitting the running of cattle in areas formerly unusable. This is a more advantageous use of the reservation resources, of course, since it permits less intensive grazing of each location and less damage to grass cover. A comparison of the grazing units calculated from Clotts' 1914 data (Table 11)[1] with current figures (Table 12) shows the nature of the change in cattle distribution. There are now increased numbers of

[1] [See P. 72--Analyst]

cattle in the Schuk Toak and Hickiwan districts. Other districts, on the whole, are running far fewer numbers of livestock than in 1914. A slight decrease is shown for the number of cattle in the Baboquivari and Chukut Kuk districts between 1914 and 1962 where cattle growers now own about 29 percent of all cattle on the reservation (See Map 7). It will be recalled that growers in these two districts held about 45 percent of all reservation cattle in 1937. 175 233 311

In attempting to summarize the present extent and importance of stock raising on the Papago Reservation, more detailed data are available than for the past, but an accurate count of the numbers of cattle and horses on the reservation is still not available. However, increased cooperation of tribal leaders and the establishment of cattle associations (in San Xavier, Pisinimo, Hickiwan, Gu Achi, Sif Oidak, and Baboquivari districts) is making it possible to obtain increasingly dependable records. 233 128 [575] [422]

The 1962 record of grazing units, and the "authorized carrying capacity" of the main reservation are shown in Table 13. In regard to capacity of the range, it should be pointed out that this was established in 1944 on the basis of work which was conducted some years earlier. 233 311 634 [128]

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Table 13. The Distribution of Stock Units on the Main Reservation in 1962 Compared with the Estimated Carrying Capacity

District	Stock Unit Capacity	Stock Units	Cattle	Horses
Baboquivari	1,780	2,261	1,639	498
Chukut Kuk	1,064	2,440*	1,590	680
Gu Achi	1,000	1,532*	1,000	426
Gu Vo	469	1,085*	610	380
Hickiwan	939	2,062*	1,000	850
Pisinimo	1,003	1,980	1,470	408
Sohuk Toak	2,102	1,799*	900	560
Sells	1,067	2,022*	1,210	650
Sif Oidak	880	861	464	318
Totals	10,304	16,070	10,082	4,770

[115] [128] Robert Roether, one of the major cattle buyers on the reservation, is of the opinion that the above estimates are too low for cattle and too high for horses.

233 422 [217] Fully as important as the number of cattle and horses grazed, is their ownership. All cattle on the reservation are owned by Indians and, except for 200 head in a tribal herd, ownership is by individuals and families. No actual records are kept of individual holdings, although the tribal office keeps a record of sales by individuals. The Bureau of Indian Affairs now estimates that at least seven families have from 200 to 600 head of cattle each, that about ten families have 100 to 150 head, and that most families have about ten head or less. The number of individuals and

---

* Because no livestock count figures are available, these numbers are estimated.

18: Kelly E-4.5 (no date) 1963 NU28 Papago NU28

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241
311
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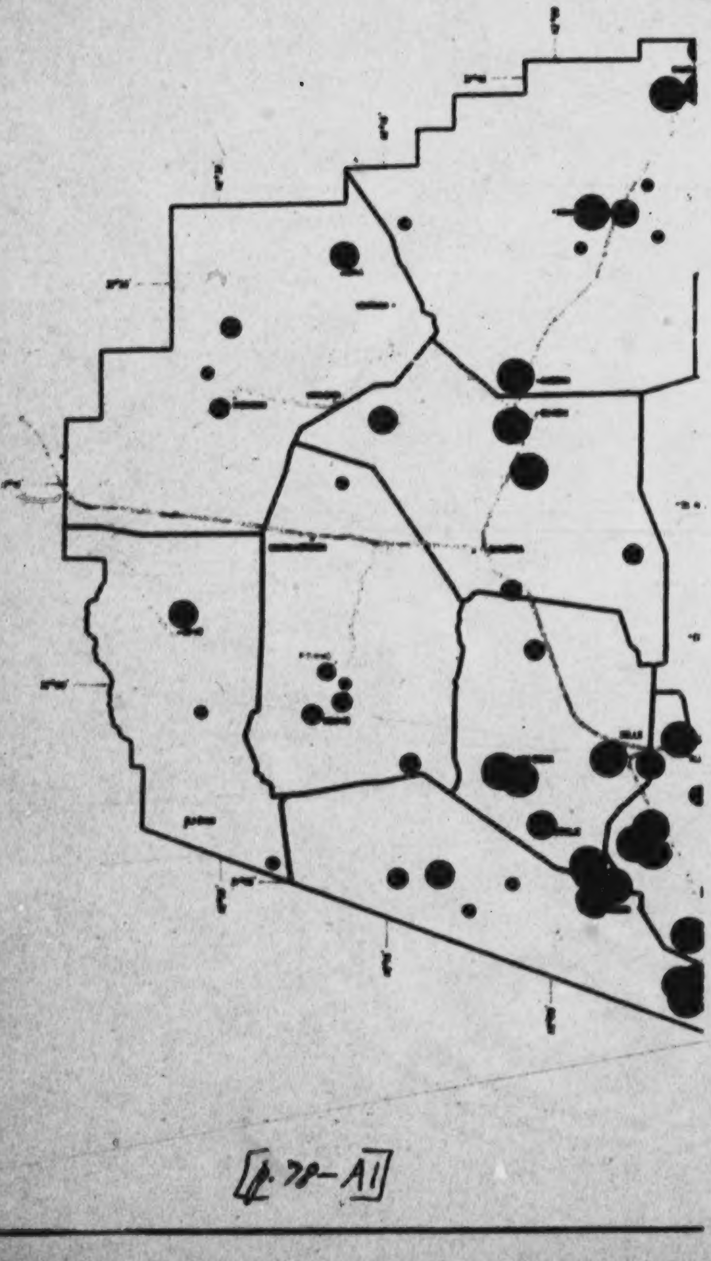

[p. 78–A1]

18: Kelly E-4, 5 (no date) 1963 NU28 Papago NU28

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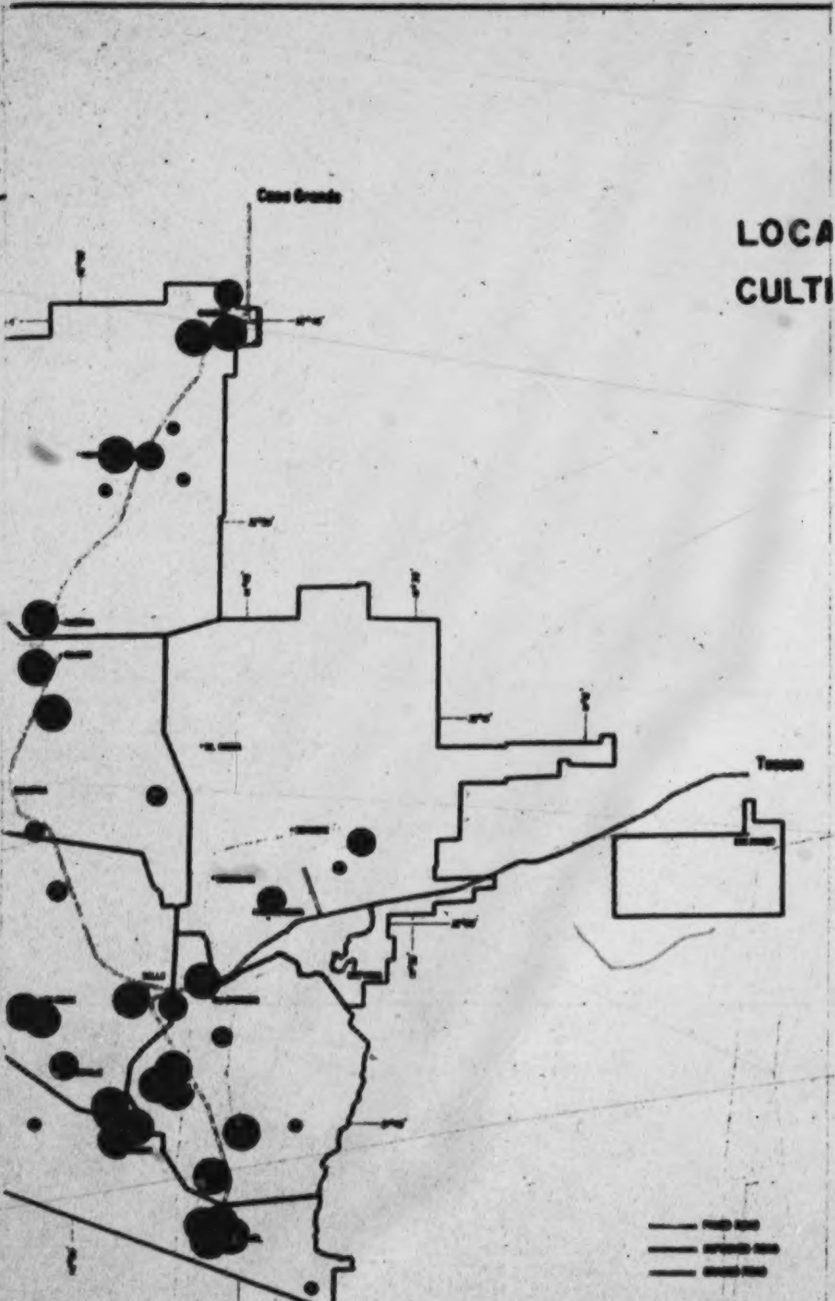
Casa Grande
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[78-A2]

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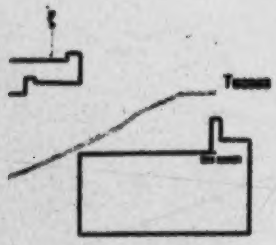
MAP 6
LOCATION AND SIZE OF CULTIVATED FIELDS 1914
(FROM CLOTTS)



● APPROX. 25 ACRES
● " 75 "
● " 150 "
● " 250 "

PAPAGO INDIAN RESERVATION

1963

[B-78-A3]

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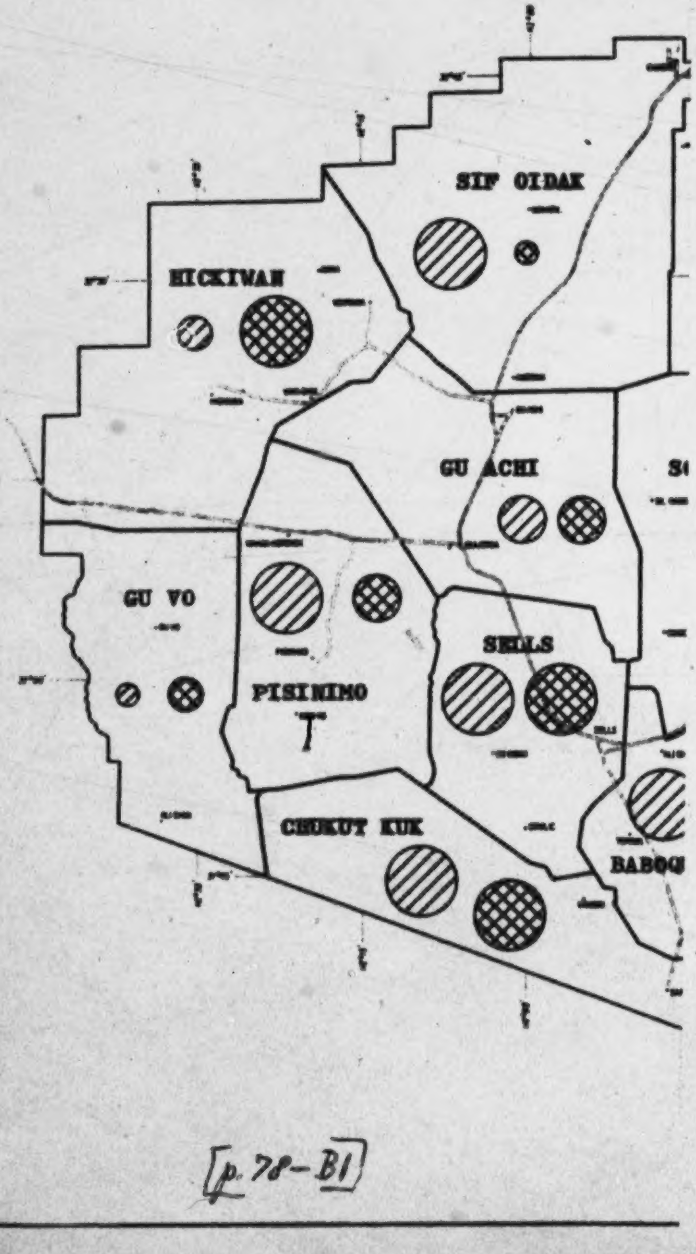
SIF OIDAK
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CHUKUT KUK
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[p. 78-B1]

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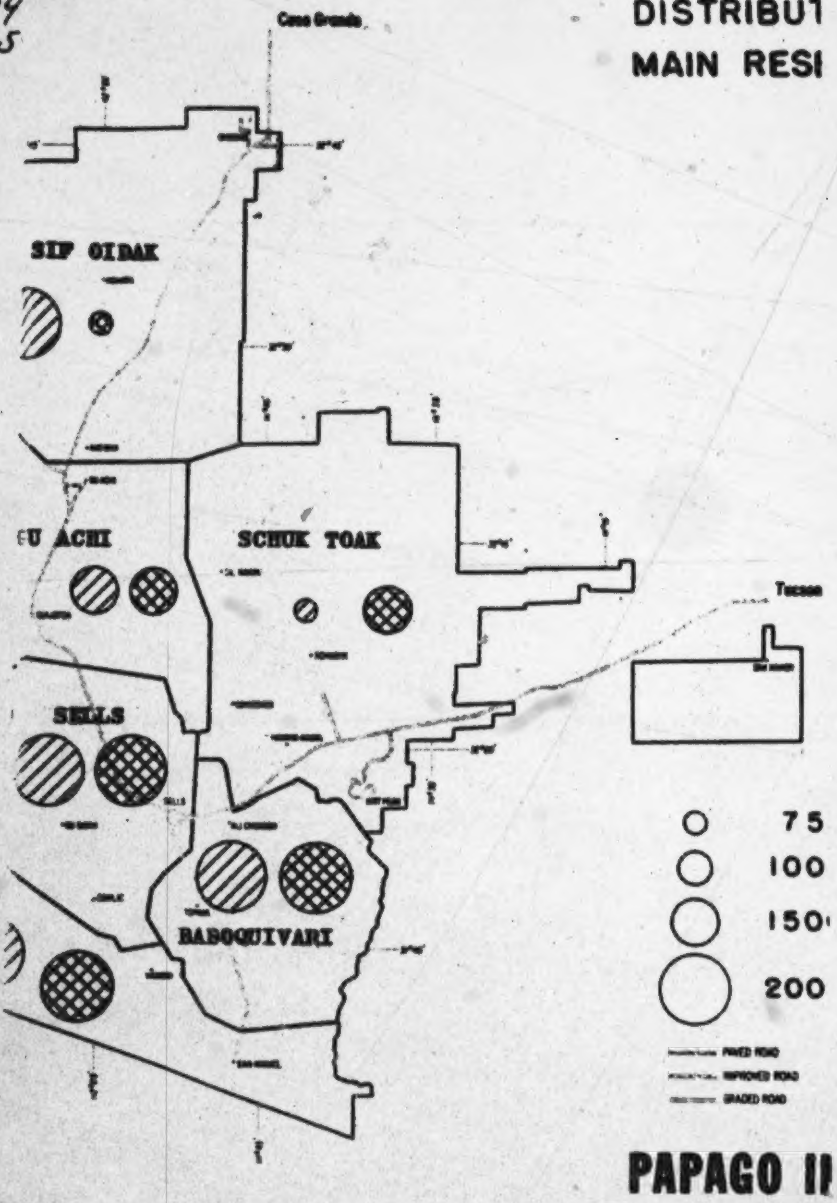
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GRADED ROAD
PAPAGO I

p. 78-B2

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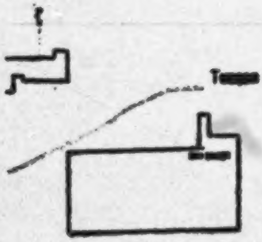
MAP 7
DISTRIBUTION OF LIVESTOCK ON MAIN RESERVATION 1914 & 1962 BY DISTRICTS



▨ 1914

▩ 1962

○ 750 - 1000 HEAD
○ 1000 - 1500 HEAD
○ 1500 - 2000 HEAD
○ 2000 - 2500 HEAD

PAPAGO INDIAN RESERVATION

[p.78-B3]

families that hold cattle on the three reservations has been estimated at between 400 and 500. Metzler summarizes the economy of stock raising as follows (Metzler, 1959, p. 57): 233 422 233 454

> "The function of cattle for most families is the same as that of a reserve account in a bank. The cattle are not sold until other sources of income have been exhausted, then enough cattle are marketed to meet cash needs of the family until other sources of income again become available. When they have no more cattle they will start to sell off their horses." 434

It should be added that cattle raising is more than merely an economic enterprise. The Papago and their cattle may be compared to the Navajo and their sheep. In both cases a way of life has been developed which becomes relatively meaningless without livestock and the work of caring for animals on the open range in isolated desert areas. 233 181

The meaning of stock raising in the total economy of Papago family life can be assessed with fair accuracy because of the records that must be kept in connection with the tribal assessment of a 3 per cent tax on the value of all livestock sold from the reservation. In 1962 the tribe collected a total of $19,631.90 in taxes on a gross Indian income of $654,397 from stock sales. For a number of years sales have totalled about this amount, occasionally running higher. Owning from one to ten head of stock, most families have incomes of less than $400 per year from ranching. Probably no more than 40 families, according to Metzler, depend entirely on cattle sales for their yearly income. In keeping 233 433 434 [217] [651] [422]

233 with this estimate Robert Roether, reservation cattle buyer,
433 is of the opinion that from 25 to 30 families own more than
434 100 head of breeding cows. Both of the above estimates are
422 higher than the estimate provided by the Bureau of Indian
Affairs.

178 Agriculture. Life on the Papago reservations has
433 always depended, and still depends, upon multiple sources of
family subsistence and income. The original pattern was a
combination of hunting, gathering, and flood water farming.
After 1700, hunting and gathering gradually gave way to
cattle raising which, in combination with flood water farming, provided subsistence and some cash income. Farming is
now declining and there is being established a new combination: cattle raising and wage work.

241 Flood water farming still persists, however, in
spite of periodic drought, back-breaking work, and low
[462] yields. Wherever it occurs today it is usually an activity
[889] of older men who raise a small plot of corn, beans, squash,
[434] and sometimes winter wheat, to supplement their income from
[182] cattle, thus making it possible to live on the reservation
the year around and according to the traditional Papago way
of life.

Cash crop or commercial farming, as will be seen later, have not appealed to the Papago since competition from non-Indian farmers and the lack of running water require

trained management and the use of fertilizers, insect control 241
and expensive farm equipment and water pumps.

Flood water farming, as it has been practiced since prehistoric days on the Papago Reservation, consists of the use of surface runoff of rain water at those spots where it could be collected and spread, either at the mouth of an arroyo or along stream beds in the larger valleys. Various names have been used to describe this technique: "akchin farming" (akchin being the Papago word for the mouth of an arroyo), "flash flood farming," and "dry farming." Actually, [177] since the introduction of wheat by Europeans, dry farming, which depends directly upon moisture from rainfall, has been used by the Papago in raising winter wheat. Corn, beans, and squash, however, which must be grown in summer, depend upon flood water which can only be supplied by the artificial spreading of moisture from intermittent streams.

Periodic surveys and estimates made by the Bureau 241
of Indian Affairs show that flood water farming on the main 178
reservation has steadily declined during the past 50 years. 657
How far the decline has gone, however, is not known. In an 127
effort to secure this information the Bureau of Indian Affairs has been systematically carrying out a farm survey during
the past five years. Thus far, only the southeastern part [311]
of the main reservation has been surveyed (Chukut Kuk, [101]
Baboquivari, and the southern part of the Sells district). [634]

241 The survey records 536 acres that are now being farmed,
311 or have very recently been farmed, out of a total of 4,466
634 acres available for flood water farming in this area. The
location and approximate size of these plots, both farmed
and idle, are shown on Map 8.

241 Although yields could not be determined, the crops
178 grown on many plots were recorded, indicating an overwhelming
preference for corn, beans, and squash, the ancient and traditional food crops of prehistoric Indians in the Southwest. Watermelons, wheat, milo, peas, and a few other crops, are grown in very small quantities. Thus the chief function of these farms is subsistence which, in fact, is a return to earlier times since as recently as 20 years ago cash crops of winter wheat were grown on much of this same land.

[114] In an effort to determine whether or not a similar
[101] decline in flood water farming has occurred in other areas
[311] of the reservation, a brief study was made by the Bureau of
Ethnic Research in the Santa Rosa, Chuichu, and Gu Vo areas.
241 The situation as it exists in the southeastern section of the
311 reservation was found to be the same in these areas. Indi-
178 vidual farmers were working less than ten acres each and
often only one or two. In each case there was a reduction in the size of family plots when compared with former years and, as in the southeast, many families had abandoned flood water farming altogether.

18: Kelly E-4, 5 (no date) 1963 NU28 Papago NU28

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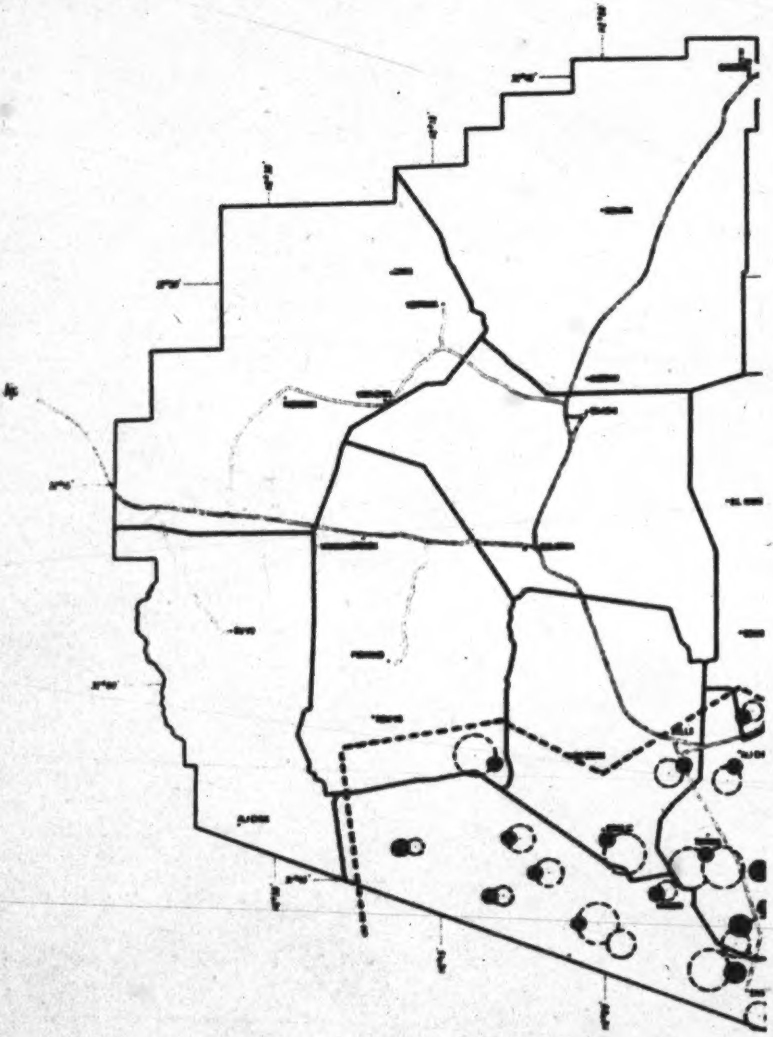

p.82-A1

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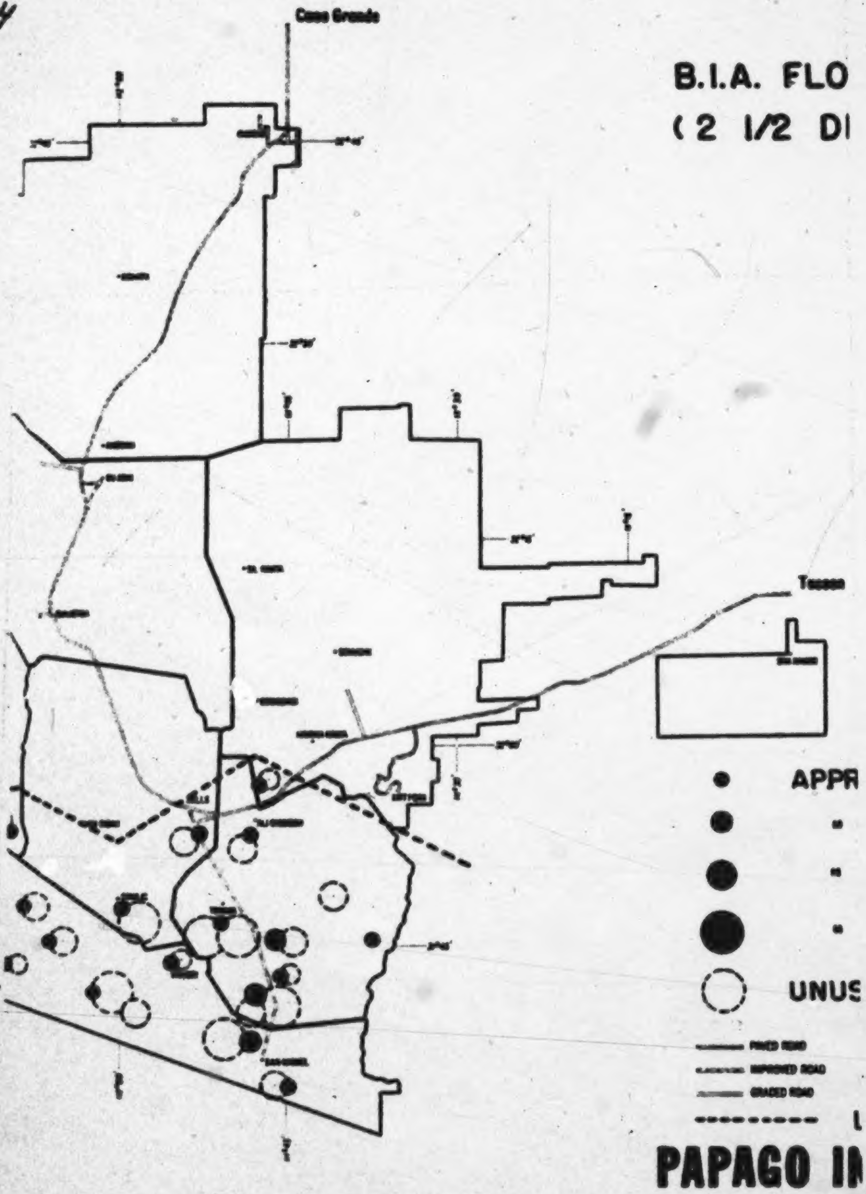
Casa Grande
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PAPAGO I

p.82-A2

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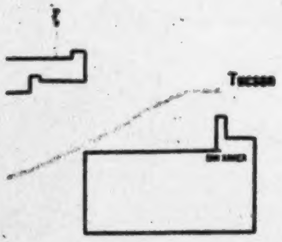
MAP 8

B.I.A. FLOOD WATER FARM SURVEY
(2 1/2 DISTRICTS COMPLETED)



ACRES FARMED 1959, '60, '61

●	APPROX.	25	(1–50)
●	"	75	(51–100)
●	"	150	(101–200)
●	"	250	(201–300)
◌	UNUSED ACREAGE IN PLOTS		

PAVED ROAD
IMPROVED ROAD
GRADED ROAD
--------- LIMIT OF SURVEY

PAPAGO INDIAN RESERVATION

1963

p. 82–A3

A series of dry years, culminating in a serious 241
drought during the summer of 1962, may, however, account for 311
some of the reduction in flood water farming. In the Santa 178
Rosa area where four farmers were interviewed, acreage had [115]
been cut from 125 to 25, and five of the 25 acres had been abandoned after planting in 1962 on account of the drought.

In the Chuichu area five farmers were interviewed. [115]
Thirty-one, out of a possible 50 acres, were being farmed. In the Gu Vo area a few farmers had attempted to farm from three to four acres each but lack of rain had forced them to give up the attempt.

Crops grown in the above areas were the same as 241
elsewhere. The major crop was beans, followed by corn, squash, and watermelons. Other crops included wheat, barley and sugar cane.

The significance of the Indian Service farm survey 241
in the southeastern corner of the reservation is greatly 311
enhanced by a previous careful survey, that of Clotts in 178
1914. The fields and their approximate acreages are shown on Map 6.[1] For the entire reservation Clotts recorded 9,177 acres devoted to flood water farming. For the area covered by the recent survey Clotts recorded 5,537 acres being farmed. The recent BIA survey shows that only 536 of these acres are now being farmed and that the amount of land that could be

[1] [See map on P. 78-A1, A2 and A3 -- Analyst]

241 farmed is now 3,930 acres. In other words, only 10 per cent
311 of the land formerly used is now being put in crops.

178 It may be assumed from our survey, and from other
evidence, that this situation holds true for the entire
reservation. A current estimate of about 1,000 acres in
flood water farming is probably fairly accurate.

241 The reduction in acreage is not surprising. The
433 thing that is difficult to understand is that there should
178 still remain two or three hundred individuals willing to
endure the hardships and the failures inherent in flood water
farming. In 1914 there were few off-reservation jobs, and
fewer Indians willing to leave the reservation in search of
work. Farming, however unrewarding, was required to sustain
[887] life. This situation is no longer true except for some men,
usually the older men, who cannot, or do not, participate in
off-reservation wage work.

241 Irrigated Farming. During calendar year 1962,
311 Papago Indian farmers grew crops on 740 acres of irrigated
land on the main reservation at Chuichu and on 45 acres of
[434] irrigated land at San Xavier. Gross income was $94,755,
[248] more than half from approximately 120 acres planted in
cotton.

241 Since 1952 the number of acres farmed by Indians
311 at Chuichu increased from 530 to 1,360 (1957) but has now
178

dropped to 740. The number of acres farmed by Indians at San Xavier has decreased from 1,125 to 45. New land has been put into cultivation at Chuichu. At San Xavier, land previously farmed by Indians has been transferred to non-Indian leasors or now lies idle.

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On the three Papago reservations, 5,275 acres of land in four areas have been developed for irrigated farming: 1,307 acres at San Xavier, 370 acres at Gila Bend, 1,678 acres at Chuichu, and 1,920 acres at Papago Farms. During 1961 the lease at Papago Farms, which had been given to a non-Indian corporation for development purposes, was cancelled and the land was idle until the summer of 1963 when the Bureau of Indian Affairs planted 160 acres in small grains and forage crops as an experiment. For details of farming in the other three areas see Table 14 and Table 15.

[427]
[657]

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Table 14. Irrigable Land Use and Acreages Farmed by Papago and Non-Indians, Papago Reservations, 1955-1962

Irrigated Areas and Use	Calendar Year							
	1955	1956	1957	1958	1959	1960	1961	1962
San Xavier								
Irrigable Acres	1,376	1,225	1,225	1,225	1,284	1,290	1,307	1,307
Acres Irrigated	677	399	643	525	775	964	942	532
By Papago	677	399	371	288	120	88	105	45
By Non-Indians	-0-	-0-	271	237	655	876	854	487
Acres Idle	699	886	583	700	509	326	259	775
Chuichu								
Irrigable Acres	1,612	1,669	1,678	1,678	1,678	1,678	1,678	1,678
Acres Irrigated	1,324	1,288	1,360	1,034	1,028	560	1,095	740
By Papago	1,324	1,288	1,360	1,034	1,028	560	1,095	740
By Non-Indians	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-
Acres Idle	288	381	318	644	650	1,118	583	938
Gila Bend								
Irrigable Acres	212	385	380	346	346	346	480	370
Acres Irrigated	212	385	380	346	-0-	73	160	321
By Papago	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-
By Non-Indians	212	385	380	346	-0-	73	160	321
Acres Idle	-0-	-0-	-0-	-0-	346	273	320	49

Table 15. Acreage and Value of Crops Grown on Irrigated Land in 1962, Papago Reservations

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Crop	Chuichu		San Xavier				Gila Bend	
	Indian		Indian		Non-Indian		Non-Indian	
	Acres	Value	Acres	Value	Acres	Value	Acres	Value
Garden	5	$ 2,500	17	$ 8,500	31	0	0	0
Cotton	115	47,840	8	3,000	246	$ 82,900	61	$23,000
Small Grains	200	15,975	20	940	210	19,230	260	17,342
Forage & Pasture	400	16,000	0	0	0	0	0	0
Totals	740	82,315	45	12,440	487	102,130	321	40,342

Gross value of Indian crops	$ 94,755
Gross value of Non-Indian crops	142,472
Gross value of all crops	237,227

The history of irrigated farming at San Xavier and at Chuichu goes back to pre-Spanish times. The San Xavier area was described by Juan Mateo Manje, who visited there in 1697 with Father Kino: 175 241

> "Here the river runs a full flow of water, though the horses forded it without difficulty. There are good pasture and agricultural lands with a canal for irrigation. The Indians harvest corn, beans, and cotton from which they make cloth to dress themselves. Squash, melons and watermelons were also raised. We counted 800 souls in 186 houses." (Karns, p. 92) [133] [286) [162]

Subsistence farming with irrigation from stream flow continued at San Xavier until 1912 with the number of acres 175 241 311

175 planted by Indians ranging from 800 to 1,200. By 1916, with
241 water no longer available from the Santa Cruz River, 1,320
311 acres were irrigated with water from three wells. Indian
[312] farming continued at about this scale until 1953 when the
present abandonment of farming by Indians at San Xavier
commenced. In 1956, as shown in Table 14, a total of 886
[427] acres lay idle. The answer was a program for leasing San
Xavier farm land to non-Indians which commenced in 1957.

241 During 1962 a total of 12 San Xavier Indians were
463 engaged in farming, but mostly in small garden plots. The
smallest of these was one half acre in size.

175 Indian farming at Chuichu has had a somewhat
241 different history. Although known to have taken place,
311 pre-Spanish farming in this area has not been specifically
312 reported. The first report on the area is from Clotts (1915),
who reported that 188 acres were being irrigated from the
Santa Cruz River, but that the building of a canal to Green's
Reservoir up stream had cut off a part of the water to Papago
fields. Commencing in 1931, deep wells were drilled to
supplement and replace the river water and, by 1937, 615
acres were developed for irrigation. In 1955, through the
leveling of additional land and the drilling of new wells
in an area just east of Chuichu, the Bureau of Indian Affairs
made a total of 1,612 acres available to Indians. See Table
14.

241 133 312 311

The rapidity with which the level of ground water in the Casa Grande Valley is being lowered now threatens the life of the entire Chuichu project. During 1962 the one remaining productive well on the west side was choked with silt during an early fall flood on the Santa Cruz, reducing its capacity from 750 to 250 gallons per minute. Since this well had already been drilled to bedrock at 230 feet, and the water level had sunk to within 20 feet of this point, it was decided not to redrill the well. The result will be the abandonment of all farming on the west side and the transfer of Indian holdings (a farming cooperative) to idle land on the east.

Even the eastern section, developed after 1955, is threatened with the lowering of the water table at a rate that may cause its abandonment during the next decade.

248 311 [474]

During 1962 five Indian farmers were growing crops in the eastern section. In addition, the East Chuichu Project (an Indian cooperative) farmed an area of 80 acres of which 40 were planted in cotton. During 1963 the 65-acre cotton allotment on the western side was moved to the eastern section and management of the new land turned over to a non-Indian operator.

241 311 427

Development of irrigated agriculture at Gila Bend and at Papago Farms has always depended upon leases to

241 311 427 non-Indian farmers. Papago Farms is a new development in an area in the western section of Chukut Kuk district which had never been farmed commercially before 1958. A total of 7,500 acres of tribal land was leased in 1957 to a corporation for a ten-year period under a plan that called for ultimate development of 5,600 acres. From 1958 through 1960 the company reported 1,920 acres under cultivation. The following year no crops were planted and the lease was cancelled.

241 311 653 The Papago Tribal Council is now working on a plan to bring this area into cultivation as a tribal enterprise. A similar tribal project is contemplated for the development of 2,000 new acres of irrigated land near the proposed Tat Momolik Dam southwest of Chuichu.

651 Tribal income from farm land during 1961 was derived entirely from the agricultural lease at Gila Bend where non-Indian leasors paid a rental of $4,000 from a gross crop revenue of $22,720.

241 311 657 History and Prospects. Papago agriculture has never lived up to its promise. In 1949 the Bureau of Indian Affairs published a Papago Development Program which was the product of joint planning by Indian leaders and Indian Service technicians. At that time it was suggested that irrigated agriculture could be developed on about 16,000 acres of land at Chuichu, San Xavier, and Gila Bend. At that time there were 2,425 acres actually being farmed on

the three reservations. Thirteen years later, in 1962, the 241
amount of land used had decreased even though, at San 311
Xavier, non-Indian farmers had been brought in to use idle 659
land. Falling markets, a falling water table, and rising [182]
costs are perhaps the principal contributing factors in the
failure to proceed with plans for the development of Chuichu.
The almost complete abandonment of farming by San Xavier 241
families has not been explained. Relatively small Indian 311
holdings, continued division of the land among heirs, and 182
the preference for wage work over subsistence farming are
probably the primary contributing factors.

The prospect for a greater development of agri- 000
culture on the reservations has not, however, been aban-
doned by the Indians nor by students of agricultural
economics. Mr. William H. Metzler, who conducted a study 311
on the reservation during 1958 and 1959 for the Department [114]
of Agriculture, has estimated from a preliminary report by
the U. S. Geological Survey that about 15,000 acres of land
on the Papago Reservation could be irrigated from deep
wells. He goes on to say (Metzler, 1959, pp. 46-7):

> "Less than one per cent of the approximately [134]
> 3,000,000 acres in the reservation is adapted
> to crop production. Probably half of these
> 30,000 acres could be irrigated, the rest could
> be made suitable for flash flood farming. It 000
> is probable, however, that the Papagos do not
> need that much land for flood plain farming.
> Probably fewer than 300 families would engage
> in it and most would require only three to five
> acres each.

246
134
[311]

> "Some Papagos, however, have discovered a wider use for this type of farming. Some families have as much as 40 flood-plain acres devoted to the production of grain and forage crops for their livestock. Since this type of use is feasible, productive use of the entire flood-plain acreage on the reservation might be made.

000

> "The tools and techniques used in flood-farming can be greatly improved so as to reduce the time required for constructing dykes and ditches, and for plowing, planting, weeding, and harvesting. . .

> "A much sounder type of agriculture for the Papago family is irrigated subsistence farming. It fits in with their tradition of small farms and home food production. But it also assures adequate amounts of moisture and the timing of application so as to guarantee good yields. It would combine well either with off-farm employment or with livestock production."

Whether or not such a development as Metzler visualises could be brought about will depend upon the cost of pumping water from deep wells (see Ground Water Report, page 27). It will also depend upon new regulations, opportunities and ideas with respect to land tenure, capital expenditures, and credit, not to mention the attitudes and interests of Papago Indian families. The present generation of Indian farmers, with few exceptions, have not been successful in industrialized large-scale farming. From two to three hundred Papago families have, however, continued to grow subsistence and feed crops on small flood water farms as a source of supplementary income. It is possible that some of these farmers would welcome a more stable farm income through the development of small irrigated plots, and that

241
[434]
000

they could thus improve their standard of living by combining incomes from farming and cattle raising or from farming and temporary wage work. 000

Chapter IV

MANPOWER RESOURCES AND EMPLOYMENT

The Administrative Population. In the absence of an up-to-date tribal 101
ll and of a practical definition which would identify Indians as falling under 162
e responsibility of tribal officials and the federal administrators on the
pago reservations, it has been necessary to define an "administrative" population
ther arbitrarily.

This is necessary for the reason that many Papago Indians (under our efinition in Chapter II) are residents of other reservations and thus fall tside the scope of programs and services administered out of Sells. Others uld not be considered eligible by reason of residence in Mexico or because they d their parents and grandparents have intermarried with other Indians or non-dians and are thus more fully oriented toward a non-Papago reservation or toward non-Indian community.

Taking these factors into account, we have defined the Papago adminis-ative population to which our employment studies will refer, as follows:

1. All Papago Indians who are residents of one of the three Papago reservations, irrespective of the degree of mixture with other Indians or non-Indians.

2. All Papago Indians who are residents of communities which are outside any Indian reservation and who have at least one-quarter Papago ancestry.

The total Papago population of 11,775 (see Page 48) was thus reduced 161
10,195 as follows:

162 Table 16. The Papago Administrative Population by Sex and Residence, 1959.

Residence	Total	Percent	Male	Female
On Papago Reservations	4,803	49.68%	2,405	2,398
In Non-Reservation Communities	4,864	50.31%	2,369	2,495
Total	9,667		4,774	4,893
Unknown Residence	528	5.18%	271	257
Total Irrespective of Residence	10,195		5,045	5,150

The administrative population is almost equally divided between reser-
vation residence and off reservation residence with 49.7% living on the reser-
vation, and 50.3% off. The 528 Papagos without known residence are not included
128 in these calculations. It is necessary to repeat that we have classified
individuals according to "usual" residence and that this designation, in many
cases, was a subjective judgement on the part of our informants.

464 Manpower Resources. The Papago labor force differs from the non-Indian
171 labor force in two principal respects. The Papagos have a high percentage of
individuals who are multi-employed, i.e., their income in any given year is
derived from a wide variety of combinations of employment. The other difference
is that the work force has a high percentage of seasonal and temporary workers,
the majority of whom must be described as "underemployed."

162
463 In the tabulations below we have assigned multi-employed individuals to
128 the type of employment in which they earned the largest share of their income
during the 12 months period preceding our interviews. Where multi-employment
income is about equally divided individuals are designated as having "mixed"
463 employment. Most multi-employed individuals are engaged in stock raising and
162

small scale farming on the reservation, in unskilled agricultural employment off the reservation, and in unskilled non-agricultural work. 463 162

Except for seasonal and temporary agricultural workers off the reservation it was not possible to secure reliable information on whether or not an individual had worked on a temporary or permanent basis. The tables, therefore, obscure the extent of the Papago work force which is temporarily employed or underemployed. Since this is an important matter in any analysis of the Papago labor force, estimates of the numbers of seasonal and temporary workers will be provided after the tables are analysed. 464 128

We are reproducing below a sample collection of individual employment records to illustrate some of the problems encountered in coding and tabulation. 463 464 [128]

Case No. 1. Male. Born in 1916. Abandoned attempt to farm on reservation some years ago. Had no livestock. Formerly worked at temporary jobs in Tucson but maintained home on the reservation. Has lived in Tucson during the past 12 months and works at temporary labor jobs and as seasonal agricultural worker.

Case No. 2. Male. Born in 1911. Has reservation farm formerly worked by his father. Farm now abandoned but he still runs cattle, about 11 head. Worked for CCC in mid-1930's, later picked cotton, then worked many years in Ajo. In recent years he had a permanent job on farm near Gila Bend. During the past 12 months he has held a permanent farm job near Buckeye: irrigating, picking, chopping, tractor driving.

Case No. 3. Male. Born in 1936. Has no farm land but owns a few head of cattle. For a number of years lived on the reservation and worked as seasonal farm hand off the reservation. Left the reservation in 1956. During the past 12 months he has had permanent job as agricultural laborer around Eloy.

Case No. 4. Male. Born in 1891. Has reservation farm, no cattle. Worked most of the time off the reservation at many jobs and in many places when he was younger. In recent years has left the reservation only to pick cotton. During past 12 months has helped with work on family farm, spent a short time picking cotton off the reservation. County provides old age assistance.

Case No. 5. Male. Born in 1932. Has lived off the reservation for a number of years. Has no farm and no cattle. Spent several years working for a Tucson nursery. During past 12 months has had steady work at the Ajo mines.

Case No. 6. Male. Born in 1915. Worked for the Bureau of Indian Affairs for many years. Moved to California two years ago. During past 12 months has been employed as a plumber in California.

463 Case No. 7. Male. Born in 1937. Has no farm land. Owns no cattle.
464 Lives on reservation. No work experience. During past 12 months has been unemployed, living with parents.

Case No. 8. Female. Born in 1927. Father had fields, no longer used. No cattle. Worked about three months each year picking cotton, formerly received Aid to Dependent Children to take care of brothers and sisters. Now all work as cotton pickers. During past 12 months spent nine months unemployed on reservation, three months picking cotton off reservation.

Case No. 9. Female. Born in 1937. Joined WAC after leaving school. Married and living in Texas last 12 months.

Case No. 10. Female. Born in 1905. Grew up on reservation farm, father had livestock. Moved to Tucson after divorce and worked as cleaning woman and as cotton picker. During past 12 months has had steady common labor work for Tucson institution.

Case No. 11. Female. Born in 1935. Family had no fields, no cattle. Left Reservation in 1942. Attended school in Tucson and Phoenix. During last 12 months has been a University student.

162 Table 17 establishes the size of the Papago labor force and compares
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464 this with the group outside the labor force. Contrary to usual practice we have
128 placed the unemployed outside the labor force since we listed as "unemployed" only
those people who had little or no income during the twelve months period preceding
our interview. In the vast majority of cases they have either taken themselves
out of the labor force or are in fact unemployable. Individuals with unearned
[434] income are usually also unemployed. The relatively small sums of money earned
from basket making, wood chopping, and from the sale of a few head of livestock
have been disregarded in our analysis. Individuals with such incomes of course,
are to be found inside and outside the labor force.

162 Agriculture on the reservation is predominantly a matter of self-
463 employment and only a few families (variously estimated at from 20 to 30) gain their
434 entire living from reservation farming and stock raising. The remaining families —
approximately 220 — supplement their income through seasonal or temporary wage
work. These are the individuals whose principal income is from reservation
agriculture. Another group live on the reservation, have small farms or livestock,

but earn their principal income from off reservation wage work. A third group of small cattle owners live permanently off the reservation and leave their cattle in the care of relatives or employ someone to look after them. 162 463 434

Table 17. Papago Administrative Population. Labor Force Compared With Those Outside the Labor Force. Individuals 19 years and Over, 1959. 162 463 464

			MALE		FEMALE	
	Total	%	Number	%	Number	%
LABOR FORCE	2,535**	46.7	1,792	66.6	743	27.1
Agricultural	1,409	25.9	1,104	41.0	305	11.1
Non-Agricultural	1,126	20.7	688	25.6	438	16.0
OUTSIDE THE LABOR FORCE	1,905	35.1	407	15.1	1,498	54.7
Housewives	1,094	20.1	-	0.0	1,094*	40.0
Unearned Income	390	7.2	184	6.8	206	7.5
Unemployed	254	4.7	123	4.6	131	4.8
Students	167	3.1	100	3.7	67	2.4
EMPLOYMENT UNKNOWN	990	18.2	493	18.3	497	18.2
Total Population, 19 Years and Over	5,430	-	2,692	-	2,738	-

* An unknown number of housewives earn some income from seasonal farm work.
** An additional 47 men and two women were in the armed forces.

The 990 individuals for whom we have no data on employment are distributed by residence as follows: On reservation, 270; off the reservations in Arizona, 248; outside Arizona, 149; unknown residence, 323.

A more detailed breakdown of the labor force by type of employment and place of employment is given in Table 18,[1] which provides most of the facts upon which an analysis of Papago manpower resources must be based. The table attempts to do three things: separate the labor force by place of employment, by agricultural and non-agricultural employment, and by level of skill. 162 463 128

[1] [see table on p. 102 -- Analyst]

162 (1) On reservation, 461 (18.2%), on and off reservation, 335 (13.2%),
413 and off reservation, 1,739 (68.6%).

(2) Agricultural employment, 1,409 (55.6%), non-agricultural employment, 1,015 (40.0%), and mixed employment, 111 (4.4%).

(3) Skilled and semi-skilled workers, 248* (10.0%), and unskilled 2,287 (90.0%).

As was noted above, (Table 16, Page 94) about one-half of the Papagos in our records for whom we have residence data make their usual home on the [434] reservation. The data above show that 18% of the labor force earn their principal income from on-reservation agriculture and wage work and an additional 13% earn their principal income from both on and off reservation employment. The remaining group (close to 20%) usually live on the reservation but earn their principal income off the reservation.

413 128 We could not make a satisfactory distinction between the skilled and semi-skilled workers. In addition, we have almost surely placed some semi-skilled [115] workers in our unskilled categories. Most of our information is from neighbors or relatives of the people involved who knew that a person was employed by a construction firm or in an aircraft factory, for example, but had no knowledge of the type of work performed. In other cases, individuals were variously employed at skilled and semi-skilled work and other individuals were variously employed at semi-skilled and unskilled work. Informants gave us, in most cases, complete data on these multi-employed individuals but there is still a subjective element in both the information and the coding.

162 413 Approximately ten percent of the Papago labor force is engaged in skilled and semi-skilled employment. These are the farm equipment operators,

[text continues on p. 103]

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*An estimated 30 individuals engaged in reservation stock raising and irrigated farming should perhaps be counted as semi-skilled or skilled. We did not make the distinction at the time and so the table shows a total of 259 unskilled workers in this category.

Chart 1. WHERE PAPAGOS WORK

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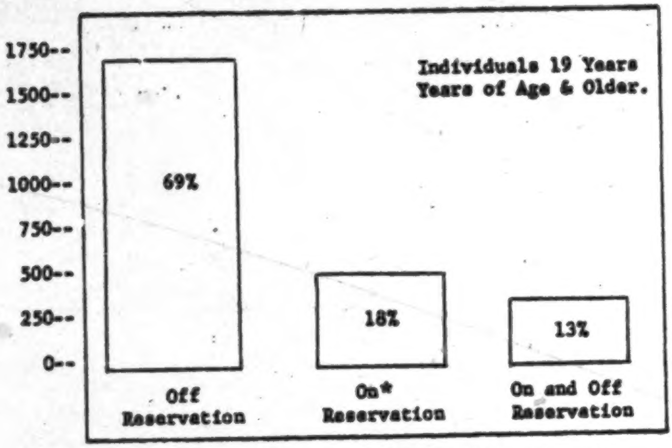

* A high percentage of reservation farmers and stockmen leave the reservation for temporary and seasonal work.

Chart 2. THE PAPAGO LABOR FORCE COMPARED WITH THOSE OUTSIDE THE LABOR FORCE.

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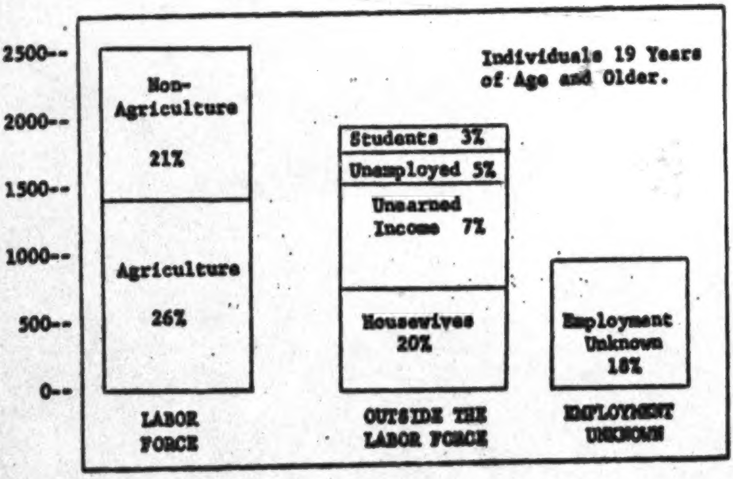

Chart 3. TYPES OF PAPAGO EMPLOYMENT *

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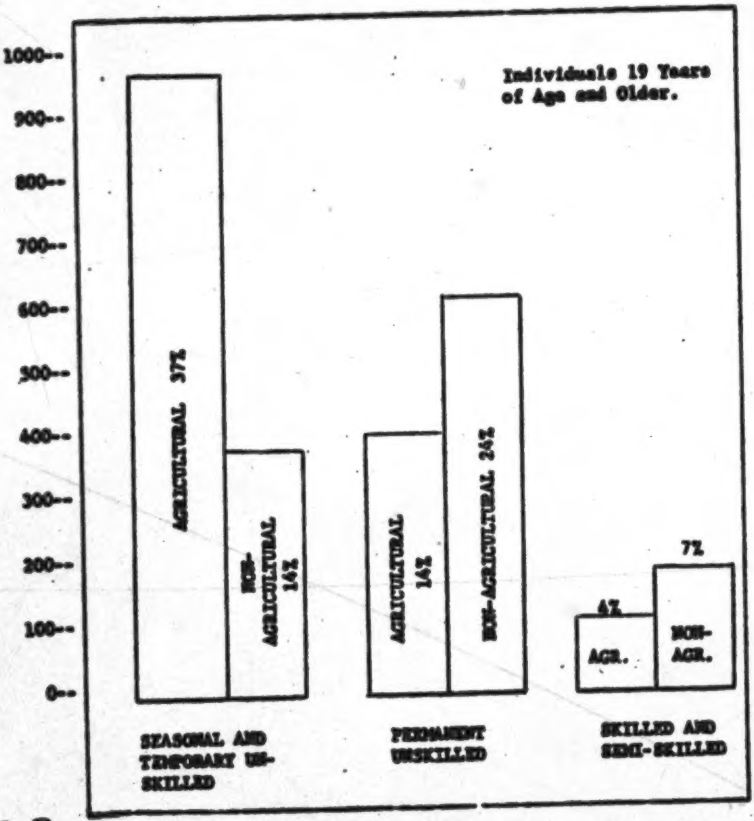

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* Data for part of this chart are estimates. We have estimated a total of 30 skilled and semi-skilled agricultural workers on the reservation and a total of 351 temporary non-agricultural workers as follows: 111 who have mixed employment and 240 who are considered temporary in our domestic and service category.

Table 18. Papago Administrative Population Labor Force by Place and Type of Employment. Individuals 19 Years of Age and Over, 1959.

Type and Place of Employment	Total	%	MALE Number	MALE %	FEMALE Number	FEMALE %
ON RESERVATION						
Agricultural	259	10.2	258	:4.4	1*	4.0
Non-Agricultural						
Skilled & Semi-Skilled	102	4.0	51	2.8	51	6.9
Unskilled	66	2.6	49	2.7	17	2.3
Mixed Employ. Unskilled	34	1.3	30	1.7	4*	4.0
ON AND OFF RESERVATION						
Agricultural Unskilled	294	11.6	283	15.8	11	1.5
Mixed Employ. Unskilled	41	1.6	32	1.8	9	1.2
OFF RESERVATION						
Agricultural	856	33.8	563	31.4	293	39.4
Skilled Permanent	69	2.7	69	3.9	0	0.0
Unskilled Permanent	365	14.4	360	20.1	5	4.0
Unskilled Seasonal	422	16.6	134	7.5	288	38.8
Non-Agricultural	847	33.4	497	27.7	350	47.1
Skilled and Semi-Skilled	77	3.0	55	3.1	22	3.0
Clerical	16	4.0	7	4.0	9	1.2
Manufacturing	13	4.0	10	4.0	3	4.0
Construction	13	4.0	13	4.0	0	0.0
Other	35	1.4	25	1.4	10	1.3
Unskilled	770	30.4	442	24.7	328	44.1
Manufacturing	57	2.2	49	2.7	8	1.1
Mining	166	6.5	166	9.3	0	0.0
Construction	52	20.5	52	2.9	0	0.0
Domestic-Service	483	19.1	165	9.2	318	42.8
Other	12	4.0	10	4.0	2	4.0
Mixed Employ. Unskilled	36	1.4	29	1.6	7	4.0
TOTAL LABOR FORCE	2535	- -	1792	70.7	743	29.3

* Married women living on the reservation were reported as " "housewives" by our informants. We did not secure information on the number who own cattle or who must have accompanied their husbands off the reservation and participated with them in seasonal farmwork, especially cotton picking.

162 463 bricklayers, nurses, secretaries, clerks, typists, truck drivers and the like. About 41 percent of the skilled and semi-skilled workers, excluding the self-employed, work on the reservation mostly for the federal agencies and the tribe. [464] Papago Indians, provided they have equal skill, are given employment preference for reservation jobs and it is obvious that they take advantage of this opportunity. Experience thus gained, is, of course, of great advantage to the individual should he desire to seek employment off the reservation.

463 555 In the process of Papago economic adjustment this group of skilled and semi-skilled workers are of special importance. These are the individuals who are up-grading their employment position; who have moved from routine clerical jobs to secretarial jobs, from cotton picking to tractor driving, and from common labor to an assembly line. [177] [868] Their children, in most cases, are learning English at home, acquiring a better education than the average and, in the end, they will constitute a large enough group of trained and educated Papagos to assume a responsible position in the development of both natural and human resources on the reservations.

162 464 From the point of view of understanding the employment picture, however, the problem of seasonal and temporary employment must be dealt with. We account for seasonal and temporary employment as follows:

Individuals with mixed employment	111
Unskilled agricultural workers on and off the reservations	294
Unskilled seasonal agricultural workers off the reservations	422
Self-employed farmers and stock raisers on the reservations who rely on supplementary wage work	239*
Off reservation wage workers in domestic and service employment. Temporary workers estimated at	240**

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*Thirty of the 239 reservation agricultural workers are estimated to be employed full time.

**This group of 240 is derived from the 483 categorized as off-reservation "domestic and service" workers (See Table 18).

The total number is 1,296, at least 30% of the Papago labor force. These are the individuals who must be classified as "underemployed." They are predominantly reservation residents, and, as will be seen later, are drawn from the Papago population with little or no formal education. 162 464 [184]

The magnitude of the underemployment and unemployment problem is shown even more clearly in an analysis of Table 17.[1] Three hundred and ninety individuals are recorded as living on unearned income (mostly welfare) and 254 individuals are recorded as being unemployed (mostly unemployable). The two classes together constitute 644 and when we add these to the 1,296 who are underemployed there is a total of 1940 Papagos, 19 years of age and over, who are unemployable, unemployed, or underemployed in a total adult population of 4,440 on whom we have employment data. The percentages are as follows: Steadily employed, 28%; unemployable, unemployed, or underemployed, 44%; housewives 24%; and students 4%. [657]

Anyone interested in the "Indian problem" knows that it is the above group of underemployed and unemployed Papagos--almost half of the adult population--who must be the subject of central attention. These are the adults who have only common labor to offer in an industrialized society which is cutting its need for common labor every day. Those are the adults who cannot speak English, or handle it badly, who have had little or no formal education, and who were raised in the relative isolation of reservation communities. [191]

It is not assumed by the Bureau of Indian Affairs or by the tribal government that time will take care of the problems of unemployment and underemployment among Indians. A number of programs--employment assistance, vocational training, adult education, community development, and social and health service programs have been established in order to give special assistance to Indians. The range and type of services, and the numbers of Indians for whom these services are made available, however, are not in proportion to the magnitude of the Papago social and economic problems as they are defined in this report. 464 657

[1] [See Table on P. 98--Analyst]

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Males Compared With Females. There are 1094 more men than women in the Papago labor force and this, of course, is accounted for by the 1094 women who are housewives. The relative distribution of women and men as between skilled and unskilled work is about the same. It is somewhat surprising, however, to find that in actual numbers there are as many skilled and semi-skilled jobs for women on the reservation as there are for men. Preferential employment of Indians on reservations obviously works to the very decided advantage of Papago women where 51 have found skilled and semi-skilled jobs as compared with only 22 in similar capacities off the reservation (see Table 18).

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As might be expected, proportionately more men than women earn their principal income from agricultural employment; 66% compared with 43%. The difference is to be found in the relatively large number of Papago women engaged in domestic service, a total of 318; about 43% of all working women.

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The Reservation Labor Force. Statistics reported in Tables 16 and 18 show that 50% of the Papagos live on the reservation most of the time but that only slightly more than 31% earn part or all of their living there. About 80% of the reservation workers are in agriculture but it is at this point that our assignment of individuals to categories indicating "major" source of income may be misleading. The 80% of Papago workers who are in agriculture earn their living, with few exceptions, from a combination of reservation and off reservation income, where as the 20% of reservation workers who have non-agricultural employment earn practically their entire income from these jobs. These are the "well to do" Papagos who work for the federal government and the tribe.

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A comparison of on and off reservation workers with those who are not in the labor force is also interesting. About 48% of the total population 19 years of age or over is in the labor force.

When the on reservation adults are separated from the off reservation adults, however, it is found that 42% of those on the reservation are in the labor

force, compared with 68% among those living off the reservation. The difference 162
is in the number of Papagos who are unemployed or who live on unearned income: 464
358 with unearned income live on the reservation, compared with 32 off the reservation and 174 unemployed persons live on the reservation, compared with 80 off the reservation.

Employment and Education, Age and Origin. Among the administrative 162
population, 19 years of age and older, 34% has had no education or has not gone 871
beyond the fourth grade in school, 39% has had a fifth grade through eighth grade education, and 28% has had one year of high school education or more. Less than one percent has attended college and less than one percent has had formal vocational training. Comparable percentages for the United States as a whole in 1959 [171]
among individuals 18 years of age and older are: no education or less than five years, 7%, up to eight years of education, 27%, up to twelve years of education, 48%. Sixteen percent of the adult United States population has attended or completed college, (U.S. Bureau of the Census, 1959).

The Papago level of education is no surprise when the history of formal 162
education on the reservation is known. It does come as somewhat of a surprise, 871
however, to learn that Indians with a few more years of education find better jobs 464
and steadier jobs than those that have had less than four years in school. The data are in Tables 19, 20, and 21. The reason can perhaps be traced to better [191]
facility in English which would be expected of the Papagos who have received an education beyond the fourth grade. The data, however, are contrary to similar [114]
information secured on the Colorado River Reservation (Kelly, 1959). Seasonal agricultural workers have a lower than average percentage of individuals who have completed the fourth grade while non-agricultural wage workers are above the average. Only seven percent of the skilled off reservation wage workers have had less than five years in school (See Table 20).

[text continues on p.109]

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Table 19. Papago Administrative Population by Employment and Level of Education. Individuals 19 and Over, 1959.

Type of Employment	No Education	1 to 4 yrs.	5 to 8 yrs.	9 to 12 yrs.	College	Vocational	TOTAL	No Data
ON RESERVATION								
Agriculture	44	73	91	44	2	0	254	5
Non-Agri. Wage Work	5	18	62	76	3	4	168	0
Other	11	6	10	4	0	0	31	3
Housewives	101	142	216	89	0	0	548	13
Unearned Income	152	82	94	18	0	0	346	12
Unemployed	29	36	63	43	0	1	172	2
ON AND OFF RESERVATION								
Agri. on, Seasonal Agri. Wage Work off	66	88	118	20	0	0	292	2
Other	1	10	24	6	0	0	41	0
OFF RESERVATION								
Agri. Wage Work								
Seasonal	88	136	141	50	0	0	415	7
Permanent	43	101	219	59	3	0	425	9
Non-Agri. Wage Work								
Unskilled	21	79	380	298	6	5	789	17
Skilled	1	4	.8	45	10	5	73	4
Housewives	30	83	219	171	4	2	509	24
Unearned Income	11	3	10	8	0	0	32	0
Students	0	8	24	114	7	11	164	3
Unemployed	7	18	30	21	0	0	76	4
TOTAL	610	887	1709	1066	35	28	4335	105
Unknown Employment	8	23	55	117	10	5	218	772

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Table 20. The Papago Administrative Population Percentage of Individuals at Each Level of Education by Type of Employment. 19 Years and over, 1959.

Type of Employment	No Education	1 to 4 yrs.	5 to 8 yrs.	9 to 12 yrs.	College	Vocational
ON RESERVATION	%	%	%	%	%	%
Agriculture	17.3	28.7	35.8	17.3	0.7	0
Non. Agri. Wage Work	3.0	10.7	36.9	45.2	1.8	2.4
Other	35.5	19.3	32.3	13.0	0	0
Housewives	18.4	25.9	39.4	16.2	0	0
Unearned Income	43.9	23.7	27.2	5.2	0	0.6
Unemployed	16.9	20.9	36.6	25.0	0	0.6
ON AND OFF RESERVATION						
Agri. on, Seasonal Agri. Wage Work off	22.6	30.1	40.4	6.8	0	0
Other	2.4	24.4	58.6	14.6	0	0
OFF RESERVATION						
Agri. Wage Work						
Seasonal	21.2	32.8	34.0	12.0	0	0
Permanent	10.1	23.8	51.5	13.9	0.7	0
Non-Agri. Wage Work						
Unskilled	2.7	10.0	48.2	37.8	0.8	0.6
Skilled	1.4	5.5	11.0	61.6	13.7	6.8
Housewives	5.9	16.3	43.0	33.6	0.8	0.4
Unearned Income	34.4	9.4	31.2	25.0	0	0
Students	0	4.9	14.6	69.6	4.3	6.7
Unemployed	9.2	23.7	39.5	27.6	0	0
TOTAL	14.1	20.5	39.4	24.6	0.8	0.6

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Similar correlations between education and employment apply to workers who have had at least one year in high school. The proportion for the entire administrative population, 19 years of age and older, is 28%. The proportion for on-reservation wage workers is 49%, for unskilled off-reservation wage workers it is 39% and for skilled off-reservation wage workers it is more than 61%.

Papagos who work off the reservation at more or less full time jobs are better educated than those who work on the reservation. The comparative percentag are in table 21.

Table 21. Papago Administrative Population by Place of Employment and Education. Individuals 19 and over, 1959.

Place of Employment	No Education	1-4 Years	5-8 Years	9-12 Years	College	Voca-tional
On Reservation						
Agricultural	17.3	28.7	35.8	17.3	0.7	0.0
Non-Agricultural	3.0	10.7	36.9	45.2	1.8	2.4
On & Off Reservation Agricultural	22.6	30.1	40.4	6.8	0.0	0.0
Off Reservation						
Agricultural						
Seasonal	21.2	32.8	34.0	12.0	0.0	0.0
Permanent	10.1	23.8	51.5	13.9	0.7	0.0
Non-Agricultural						
Unskilled	2.7	10.0	48.2	37.8	0.8	0.6
Skilled	1.4	5.5	11.0	61.6	13.7	6.8

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The differences in level of education between men and women is very slight and for various categories of employment the numbers involved are too small to have any great significance. Men in off-reservation skilled work are, on the whole, better educated than women in the same category with 84% of the men and 78% of the women having better than a ninth grade education. The numbers involved are 42 and 18 respectively. Housewives are better educated than the average

Papago women and this is probably due, as might be expected, to the lack of education found among the women who must support themselves or help support their families in seasonal agricultural work. Women engaged in non-agricultural wage work, which includes the women who work as domestics, are the best educated. 162 871 562 462 464

Employment and Age. The significant age differences in employment are given in Table 22. Contrary to heretofore inconclusive evidence, Papagos under forty hold more jobs in off-reservation wage work (agriculture and non-agriculture) in proportion to their numbers than do the older men. The unemployed, however, are definitely younger men: 6.3% as compared to 4.0%. Unearned income (usually welfare) goes to the older people, 17.6% as against 2.4%. There is little or no sex difference in this category. 162 464 561

There is a very high proportion of Papagos over 65 who are receiving unearned income (usually Old Age Assistance): 206 out of a total of 343 (57%). [657] [888]

Table 22. Papago Administrative Population Employment by Age. Individuals 19 Years and Over, 1959.

Type of Employment or Income	Under Forty			Over Forty		
	Total	Number	%	Total	Number	%
Reservation Agriculture	2540	115	4.5	1907	155	8.1
Reservation Wage Work	2540	72	2.8	1907	46	2.4
Off Reservation Wages	2540	1065	41.9	1907	634	33.2
Unemployed	2540	160	6.3	1907	77	4.0
Unearned Income	2540	60	2.4	1907	335	17.6

Employment and Origin. In addition to a low average education, the Papago labor force has the added disadvantage of little or no childhood experience in areas where young people normally have a wide variety of jobs. Approximately 86% of the present Papago labor force originated on the three reservations where opportunities for earning money at odd jobs are practically non-existent. Boys and girls on the reservations, of course, help their families in the home and on 162 464 868

162 the farm or range, but this is far different from the training received when young
464 people work for strangers. The 14% that originated off the reservation reflect
868 this, and other advantages in the nature of the jobs they hold (see table 23).
[463] They have 18% of the permanent agricultural jobs, 19% of unskilled wage work and
37% of the skilled wage work.

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Table 23. Papago Administrative Population. Comparison of Types of Employment by Origin. Individuals 19 and Over, 1959.

Types of Employment	Origin On Reservation		Origin Off Reservation	
	Number	Percent	Number	Percent
ON RESERVATION				
Agricultural	273	96%	11	4%
Non-Agricultural Wage Work	152	91	15	9
Other	32	94	2	6
Housewives	511	93	37	7
Unearned Income	306	95	15	5
Unemployed	171	98	3	2
ON AND OFF RESERVATION				
Agriculture on, Seasonal Agric. Wage Work off	287	98	7	2
Other	41	100	0	
OFF RESERVATION				
Agricultural Wage Work				
Seasonal	381	92	33	8
Permanent	353	82	76	18
Non-Agricultural Wage Work				
Unskilled	645	81	151	19
Skilled	47	63	28	37
Housewives	376	72	150	28
Unearned Income	21	72	8	28
Students	117	71	48	29
Unemployed	57	71	23	29
TOTAL	3770	86	607	14

Total with origin unknown 64. Total with employment unknown 495.
Total with both origin and employment unknown 395.

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Papago Agricultural Workers in Pima County. Agricultural work off the reservation is of such great importance to Papago family economics that we felt it necessary to make a special study of this subject. The project was planned and executed in 1961 by Mr. Harland Padfield, a Department of Anthropology graduate student who is an authority on this subject. Unfortunately, the study was limited to Pima County since funds did not permit the extension of the research to other sections of southern Arizona.

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Mr. Padfield was able to establish two points: (1) Papago Indians in farm work are shifting to other jobs than seasonal cotton picking and are not being displaced because of mechanization, (2) they account for 30 percent of the total man-hour input and 27 percent of the total wage input on Pima County farms and receive total annual earnings of about $630,000. The evidence, although not conclusive, also indicates that there is a steady increase in the training and use of Papagos in the operation of farm machinery and in other skilled jobs.

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The author concludes his report with the following words: "These data should make it patently clear that with the Papago Reservation virtually surrounded by 370,000 acres of farm land needing a labor force in excess of 10,000 workers and a labor expenditure probably in excess of $13,000,000 annually, programs and policies aimed at the problem of Papago economics cannot ignore farm labor; neither can programs and policies aimed at the problem of farm labor ignore the Papago Indians."

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Padfield's work was based upon an area sample which permitted him to generalize from detailed interviews with 21 of the 119 farm operators in Pima County with a total acreage of 29,736 out of 64,873. Data thus collected was supplemented through interviews with crew leaders who recruited the seasonal workers, mostly cotton pickers, for the farms drawn in the sample.

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18: Kelly E-4,5 (no date) 1963 NU28 Papago NU28

The author's summary of findings will be found in Table 24 where he analyses his sample in terms of Papago man hours of farm work compared with other workers; in Table 25 where man hours are given in percentages; and in Table 26 where earnings, calculated for the sample, are projected to the total amounts earned by all farm workers in Pima County.

An interesting distinction is made between temporary farm work and seasonal farm work. This was possible because farmers keep their own records on temporary employees who are hired for many types of jobs during the year. Seasonal workers, on the other hand, are hired by labor contractors (crew leaders) to take care of peak periods of farm labor demand.

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Table 24. Number of Workers, Man-Hours, and Earnings by Category of Work and Ethnic Affiliation from a Sample of Pima County Farms.

Work Categories		Non-Indian Amount	Papago Only Amount	Other Indian Amount	All Workers Amount
Direct Permanent full time	No. workers*	164	41	8	213
	Total man-hrs.	492,000	107,004	20,880	619,884
	Total wages	$551,040	$121,764	$23,760	$696,564
Direct Temporary part time	No. workers*	64	227	9	300
	Total man-hrs.	46,126	111,530	7,200	164,856
	Total wages	$ 34,594	$ 83,647	$ 5,400	$123,641
Indirect crew lead- ers' crews	No. workers*	261	146	158	565
	Total man-hrs.	133,377	116,220	89,100	338,697
	Total wages	$ 86,695	$ 75,543	$57,915	$220,153
All Work Activities	No. workers*	489	414	175	1,078
	Total man-hrs.	671,503	334,754	117,180	1,123,437
	Total wages	$672,329	$280,954	$87,075	$1,040,356

*These worker figures do not represent discrete units, except in one category--"Direct Permanent." For the other two categories they represent contacts with actual persons, who may or may not have been recalled by name, which were recorded primarily for the purpose of facilitating the informants' and investigators' computation of man-hours which do represent discrete units.

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Table 25. Percentage of Total Man-Hours by Category of Work and Ethnic Affiliation of Workers from a Sample of Pima County Farms.

	Non-Indian	Papago Only	Other Indian	All Workers
Direct Permanent	79.3%	17.3%	3.4%	100%
Direct Temporary	28.0	67.6	4.4	100
Indirect	39.4	34.3	26.3	100
All Work Activities	59.8	29.8	10.4	100

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Table 26. Projection of Sample Findings as an Estimate of Total Income from Farm Work in Pima County by Ethnic Affiliation of Workers*

Work Categories	Non-Indian	Papago Only	Other Indian	All Workers
Direct Permanent Full Time	$1,238,292	$273,627	$53,393	$1,565,312
Direct Temporary Part Time	77,739	187,971	12,135	277,845
Indirect Crew Leaders Crews	194,820	169,760	130,146	494,726
All Work Activities	1,510,852	631,358	195,674	2,337,883

* Projections for the entire county were calculated by dividing the item--wages in this case--by ".445" the fraction of total county acreage (66,875) that the acreage of the sample farms (29,796) comprised. Average wage for permanent workers was $1.00 per hour plus about $30 per month in other benefits, for direct temporary workers it was 75¢ per hour and for indirect workers it was 65¢ per hour.

162 Changes in Papago Job Participation. With reference to Table 24,
464 Padfield points out that Papago participation in Pima County farm work is roughly
equal in all categories--107,004 man-hours in "direct permanent", 111,530 man-hours
in "direct temporary", and 116,220 man-hours in "indirect" (i.e., seasonal labor
contracted by crew leaders). The following discussion of this point and other
data developed by Mr. Padfield are taken directly from his final report.

From all accounts traditional Papago off-reservation work in the past
has been seasonal work, chiefly in cotton (Dobyns, 1950). In 1961, Papagos
supplied not only a significant (one-third) proportion of all farm work in the
county, but two-thirds of this large proportion of work in 1961 was not seasonal--
[114] admittedly not altogether permanent, but not seasonal. Thus either these earlier
impressions are erroneous or there has been a marked trend toward more permanent
and/or more highly skilled farm jobs in the past ten years.

The growers themselves tend to support this inference in that over half of the 21 comprising the sample said that they were using Indians in more skilled jobs, with only one grower saying that he was using them in less skilled jobs.

The individual employment records of 43 Papagos also tend to support this inference in that 32 percent of them show an advancement in job skills with the rest showing no change either way.

162 The Status of Hand Labor. Our data (Table 24) indicate that seasonal
463 hand labor still accounts for one-third of all the man-hours of farm work in Pima
464 County. This leads us to question the assumption that agricultural hand labor
[114] will shortly be a thing of the past, and that Indians depending on income from
hand labor are ipso facto displaced workers. This phenomenon is far more complicated than that.

463 In the first place, seasonal hand work is by no means all the hand labor
464 expended on farms. Much of all crop production activity is still hand--irrigating,

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ditching, weeding, etc. As workers who have traditionally participated in these activities move up or out to other jobs, these activities absorb many workers who are being replaced by harvesting machines. In addition, there is a continuing need for hand picking of cotton and a local labor supply must be maintained since out-of-state migrants have had little incentive to move into southern Arizona where the large scale adoption of cotton-picking machines has cut employment opportunities. Major dependence upon machines, as a matter of fact, can back-fire on growers, particularly when caught in unseasonable torrential rains--as in December, 1959--which rendered picking machines useless. Growers also recognize that hand picking of cotton can often be to their advantage. With reference to cotton thinning, some of the largest farms were going back to hand labor in 1962.

In summary it may be said that the margin of benefit at least for many growers in many circumstances is still sufficient to dispel the notion that machines are going to replace hand labor or even seasonal hand labor in the forseeable future.

Papagos are getting 34 percent of the seasonal hand work on Pima County farms. Proximity of farms in this county to the reservation is largely responsible for these favorable ratios; nevertheless there are other factors operating which are putting Indians in a generally more favorable position for these seasonal work activities. As mentioned above, the massive decline in the out-of-state migrant stream which is traceable to mechanization has placed greater dependence upon local workers for the jobs that remain.

Another result of mechanization which may have a counter result in favor of the Indian worker is the wholesale abandonment of the farmer-owned housing system for seasonal workers, and the subsequent shifting of recruiting, superintending, and paymastering services to the crew leader. The extent of crew leaders' use of Indians, as well as crew leaders' ethnic preferences tend to

463 support this inference. Seventeen crew leaders were interviewed. Only one
464 reported using Indians less frequently than formerly. All the rest have either
observed no trend, are using Indians the same or are using them more. Five of
the 17 reporting said they are using them more.

There are, of course, certain obvious factors inherent in this kind of
464 177 829 work pattern which are compatible to general Indian and Papago Indian participation.
The worker can enter and withdraw at will without obligating himself to become
integrated into Anglo society. The family and village pattern can remain intact.
Income tax and social security, in fact, the whole Anglo pay check complex is in
most cases avoided. Language barriers are made insignificant, and the standardized
relationships within the extended family are most usefully employed to get work
through word of mouth communications. The upshot is that this kind of work,
though not as rewarding financially as other kinds of work, is least disruptive
of folk patterns.

464 Conversely, the advantages of Indians to crew leaders are quite simply
that, relative to other domestic seasonal workers, they are dependable, available,
and exploitable.

Direct Temporary Farm Jobs. The high utilization (67%) of Papagos as
temporary farm workers (as opposed to seasonal) is of significance in two
[461] directions. It indicates, first of all, that Papagos are willing to take this
kind of work and that farm managers seeking temporary employees depend upon the
[868] Papago labor pool. More significant for the Papagos is the opportunity they thus
gain for training in all types of farm work, including the operation of farm
[177] machinery. Potential benefits, in fact, carry beyond the limits of farm work
since the nature of the employment (as contrasted with seasonal work under a crew
leader) involves direct and intimate experience with an Anglo employer and all the
463 complexities of wage work employment. The Papagos are obviously well started in

the process of job upgrading which has moved other ethnic groups from seasonal farm work to temporary and permanent farm work to urban industrial employment. 463

Papago Welfare Programs. There is little or no evidence that Papago Indians have taken undue advantage of welfare programs. On the contrary, there is much evidence that state and federal welfare payments make the difference between complete and painful poverty and a bearable standard of living for many reservation families. This last statement holds particularly true for the old people--close to 60% of all welfare payments go to individuals over 65--who are especially vulnerable under modern conditions. 657 511 [888]

To learn more about this problem, and its place in reservation family economics, Mr. Richard Jones, graduate research assistant in the Bureau of Ethnic Research, was assigned the task of gathering and analysing necessary data. His work was thorough, covering all phases of welfare administration, welfare costs, and the effect of welfare on Indian families. A summary of his findings is given below. 114 121

Information gathered from the Indians themselves very obviously gives an undercount of welfare cases. We report a total of 390 individuals (on and off reservation) who received unearned income in 1959. The official number of cases, reported by Jones for reservation residents alone for 1959 was 448. We report a total of 206 individuals over the age of 65 receiving unearned income while Jones reports 266 cases of Old Age Assistance (59%). 657 128

It is not likely that Papagos would deliberately withhold information on welfare. The difference is probably to be found in the welfare cases among the 990 on whom we have no employment data, and in the reporting of individuals receiving welfare as "unemployed". In any event, we were forced to depend upon informants since welfare information, which identifies the recipient, is confidential and so not available to us.

There are five welfare categories, Old Age Assistance, Aid to Dependent
657 Children, Aid to the Blind (all administered by the state welfare office), Child
Welfare and General Assistance (administered by the Bureau of Indian Affairs).
In addition, everyone eligible for assistance in the above categories, plus those
of minimum income, are eligible for surplus food under the Surplus Commodities
Program (a state agency).

By 1962, according to Jones, the number of reservation welfare cases
162 had jumped from 448 to 536, not counting an estimated fifteen children receiving
657 Child Welfare benefits and 170 heads of households receiving surplus food.
Counting dependents this means that more than 1800 residents out of a total of
about 5000 on the three Papago reservations are receiving some assistance, directly
or indirectly, from welfare programs.

Welfare statistics pertaining to the Papago reservations are given in
162 Table 27. Trends for fiscal years 1958 through 1962 indicate a gradual increase
657 in Aid to Dependent Children cases. This has been noted also for the non-Indian
178 population as a whole. An opinion with respect to the reason for this was provided
[115] by Pima County welfare officials. More women and children tend to return to the
[586] reservation, or remain there. More women are finding out about ADC grants. In
addition, there is a national increase, as well as a local increase, in divorce.
[848] There is also an increase in illegitimacy. The primary cause for the condition
that makes a woman and her children eligible for A.D.C., however, is the death,
[164] disability or desertion of the father. On the reservations death claims 25% of
[165] such cases, disability 22%, and desertion about 19% of the total.

[586] Given the nature of Papago family economy, the results of a comparison
162 with the non-Indian population of Pima County are not particularly surprising.
171 For 1961 the non-Indian population of the county was estimated to be 48 times as
657 large as the reservation Indian population. Using the population ratio of 1 to 48

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Table 27. Welfare Cases and Payments to Papago Reservation Residents, Fiscal Years 1958 through 1962. (Source: State and Federal welfare statistical reports).

Category	Average Monthly Cases	Average Monthly Payments	Estimated Annual Payments
1958			
Old Age Assistance	273	$14,884	
Aid Dependent Children	102	9,331	
Aid to the Blind	9	603	
General Assistance	72	3,710	
Child Welfare	17	993	
Total	473	29,521	$354,252
1959			
Old Age Assistance	266	15,133	
Aid Dependent Children	102	9,644	
Aid to the Blind	7	482	
General Assistance	73	4,218	
Child Welfare	17	999	
Total	465	30,478	365,736
1960			
Old Age Assistance	255	16,161	
Aid Dependent Children	119	12,656	
Aid to the Blind	8	545	
General Assistance	70	4,489	
Child Welfare	8	810	
Total	460	34,661	415,932
1961			
Old Age Assistance	257	15,801	
Aid Dependent Children	135	14,540	
Aid to the Blind	9	594	
General Assistance	87	5,499	
Child Welfare	12	949	
Total	500	37,383	448,596
1962			
Old Age Assistance	266	16,191	
Aid Dependent Children	154	16,680	
Aid to the Blind	12	613	
General Assistance	104	4,624	
Child Welfare	n.a.	1,375	
Total	536+	39,483	473,796

162 as a basis for comparison, ADC cases occur in the ratio 1 to 6, OAA cases occur
657 in the ratio 1 to 7 and Aid to the Blind cases occur in the ratio 1 to 10.
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The data given above reveal quite clearly the "vulnerable" situation
511 of most Papago families and the depressed economic conditions on the reservations.
657 The welfare picture, however, is not quite as bad as it appears to be. Indians
829 look upon their reservations as a place of security and support--not only in terms of the assistance rendered through federal agencies, but also the security and support that can be expected from kinsmen and neighbors in an Indian community.
[162] Indians in trouble return to the reservations and this is undoubtedly the reason why Jonas found 465 individuals receiving welfare payments on the reservations in 1959 and we found only 32 such cases among Papagos living off the reservations.

128 Employment and Income on the Papago Reservations. Information on resi-
162 dence and place of employment as given in this report indicates how difficult it
434 would be to study a "reservation population" apart from a "tribal population." It has been shown that family movement on and off the reservations is a constant process and that the annual earnings of 350 adults, at the very least, are from sources both on and off the reservation. Another group of about 450 adults (not counting the unemployed and housewives) are recorded as having their "usual" home on the reservations but live on income from temporary and seasonal wage work on the outside.

128 Patterns of Papago employment and the many and varied sources of income
434 pose major problems in any attempt to learn the sum of Papago earnings family by family. Even in a sample survey, where the employment and earnings of a small number of families could be studied intensively, the findings would be less than precise for the hundreds of families who are multi-employed, irregularly employed,

and receive income from many sources. Records, of course, are not kept and Papago memory of such activities is vague. 128 434

There are three sources of income for reservation families where the numbers of individuals involved and the amounts received can be calculated with some degree of reliability: (1) reservation farming and stock raising (2) reservation wage work and (3) unearned income. For the other three principal categories (4) non-agricultural self employment (wood chopping, home crafts, etc.) (5) wage work on and off the reservations and (6) wage work off the reservations, we know the approximate numbers of adults involved, the approximate amount of hourly earnings, but we know nothing with respect to the numbers of hours of employment during the year. 434 463 128

Gross Papago family income from irrigated farming and stock raising on the main reservation and at San Xavier has been estimated at $754,152 (see Chapter III). To this must be added the value of subsistence crops grown by Papagos on flood water farms. The sum has been very generously estimated at $5,000. 434

No one has made a study of the cost of growing crops or raising livestock on the reservations. The major cost, however, is labor which may be counted as income. Other costs are probably in the neighborhood of $100,000 which gives us an estimate of about $650,000 as the annual Papago family earnings from reservation agriculture.

Reservation income from wage work has been calculated with fair precision for fiscal year 1963. The total is $809,264 (see Table 28).

Income from welfare (see Table 27) for fiscal year 1962 is estimated at $473,796. The total for the first three categories of income is as follows:

1. Reservation farming and stock raising	$650,000
2. Reservation wage work	809,264
3. Welfare income	473,796
Total	$1,933,060

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Table 28. Income of Papago Indians Employed on the Main Reservation and at the San Xavier Hospital and Mission during Fiscal Year 1963.

Employer	No. Papago Permanent	Employed Temporary	Annual Income
Bureau of Indian Affairs	67 *	34	$327,872 65,104
Public Health Service	49	2	218,858 1,799
Papago Tribe	13	3	30,289 497
Kitt Peak Observatory	4	24	18,221 58,982
Catholic schools-missions	18	1	20,012 1,000
Reservation Traders	12	4	25,931 4,411
Reservation Restaurants	6		8,944
Reservation Gas Stations	4		8,580
Reservation Cattle Buyers	3		7,051
State Highway Department	2		10,379
Sells Post Office	1		674
Protestant Missions	2		660
Total	181	68	$809,264
Special 1963 Federal Works Project			301,498 **
Total for Fiscal 1963			$1,110,762

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* Individuals in this column are employed on a year round basis but not necessarily full time.

**This is a non-recurring item, undoubtedly absorbed some workers who would have found work elsewhere, and will not be included in our calculations of annual reservation income.

By referring to Table 18 (page 102) the individuals who received income from these sources in 1959 may be identified by categories. It may be assumed that the numbers of individuals involved, as the amount of income, from farming, and stock raising have remained about the same. The number of permanent and temporary wage workers has gone up from 202 to 249 and the number of welfare clients has increased from 463 to about 550. 162 434 463

The numbers of individuals involved in the above categories in 1962 are thus: reservation farming and stock raising 259, reservation wage work 249 and welfare income 550.

We do not know the amount of agricultural income received by the 259 adults whose principal income was from this source since large numbers of cattle are owned by Papagos who work off the reservation. Neither do we know the amount earned by these 259 individuals from seasonal and temporary wage work. Perhaps the two about balance each other. Taking this as our assumption we have the following result.

Average annual income of adults engaged in stock raising, farming, and some temporary wage work is calculated at $2509 (259/$650,000). Average annual income of all reservation wage workers is $3250 (249/$809,264). Average annual income of "permanent" reservation wage workers is $3742 (181/$677,471). Average annual income of welfare recipients (individuals receiving payment and not including dependents) is $861 (550/$473,796). 434 463

We have thus accounted for 1058 of the 2596 individuals 19 years of age and older who make their usual home on the three Papago reservations. The remaining 1538 are distributed as follows: 735 are housewives or unemployed, 335 are part time farmers and stock raisers on the reservation and part time wage workers off the reservations and 468 secure all their income from seasonal and temporary wage work off the reservations. We know what these people do, but we are unable to calculate their income since there is no way of determining the average number of days or weeks they are actually employed during the year. 162 463 [128 [434

162 of days or weeks they are actually employed during the year. Average annual
434 earnings for this group of 803 individuals would probably be located somewhere
between the average income of welfare recipients ($861) and the individuals
engaged principally in reservation farming and stock raising ($2509).

121 Only a sample survey, now made possible by the existence of a Papago population register, could determine more precisely the annual income of Papago adults, or Papago families. The answer, whatever it might be, would add little to our knowledge. We know the nature of Papago employment, we know the approximate numbers of individuals in each of the categories of employment, and we know the magnitude of the problems of unemployment, underemployment, and dependence upon welfare. To know the dimensions of a problem, however, is only the beginning. This must be followed by an examination of the facts which may lead to a solution. A great deal, but by no means all, of the necessary information is contained in this report. The task of analysis, however, must be deferred at this time except for certain more obvious considerations which are treated below.

178 Conclusion. The outstanding fact, and this runs as a thread through all
185 our statistics, is that the Papago Indians are solving their own problems. Start-
463 ing from very nearly "zero" in 1917, when the Sells Reservation was established,
464 the Papagos have shown great skill and persistence in finding ways to remain self-
supporting in the face of meager resources and a rapidly changing world around
them. They have done more than this. A substantial number--more than 300--
Papago boys and girls have secured an education and have moved into productive
employment as skilled and semi-skilled workers. Another substantial group, about
38% of all adults, have found permanent and near permanent employment on and off
the reservation in spite of language, cultural, and educational handicaps.

The trend of events is clearly discernible in our material. Papago families remain on the reservations, taking advantage of all possible income

opportunities until these are exhausted. At this point they turn to outside 178
employment. A full half of the members of the tribe have made this move on a 185
more or less permanent basis and another thirty percent make the move on a 463
seasonal or temporary basis. This is the direction of Papago adjustment and its 464
most encouraging aspect is the fact that it is a case of self-adjustment, uninfluenced in any important respect by forces outside the interests and goals of the Indians themselves. This is not to say that they like it. This study, and every other study of the Papagos, has shown that they accept a removal from their reservation villages only with greatest reluctance; partly because they prefer to live in a familiar environment and near their friends and kinsmen, and partly because they do not have the background in education and experience which would assist them in facing the many problems of life in a strange environment. Neither do they have the background in education and experience which would permit the more intensive development of reservation income opportunities, thus permitting larger numbers of Indians to remain on the reservations and at the same time enjoy a more acceptable standard of living.

There are many factors involved in the solution of the economic problems 464
which have been presented in this report. We have presented data on the level of 871
formal education and the range of work experience. The generation of adults now seeking employment did not attend school at all, or were in school only a few years when they were children. Their origin is predominantly from reservation villages and their work experience has been almost exclusively in agricultural or common labor employment. 000

These are the outstanding handicaps with which they must contend, and they are the handicaps, even though less severe, with which their children will have to contend.

The situation is one in which necessary conditions for improvement can be clearly defined without, at the moment, being diverted by the host of

000 intangibles which, of course, are a part of any solution. These necessary conditions are well known to tribal officials and to the administrators in the Bureau of Indian Affairs. They include the formal education of all children, adult education, vocational education, on-the-job and apprenticeship training, social services, relocation assistance, information for possible employers on the abilities of Indians, extension work and home economics training. These are established and recognized services but, for the Papagos, most of them are new and, considering the backlog of need that exists, their scopes and definitions are limited.

The Papago problem, in brief, is a human problem. The progress Papagos have made through the years indicates that, given time, the problems will solve itself or, at the least, become less serious. A more careful analysis of specific trends and the various factors of adjustment, however, should lead to new proposals and new ideas which could speed the process of economic improvement on the reservations.

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18: Kelly NU 28 Papago NU28
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[Information on public assistance by various governmental agencies to reservation Indians will be found in category 657.]

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[For author's suggestions on expanding Papago irrigation agriculture, see category 116, pp. 90-93.]